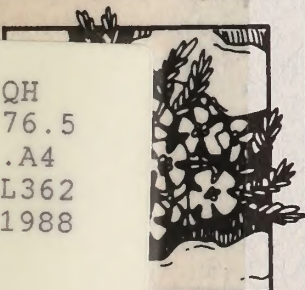
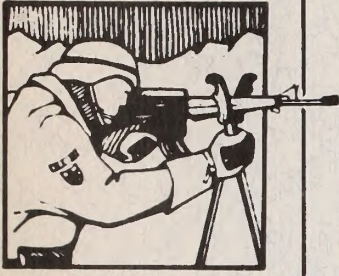


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Fort Greely

Draft Resource Management Plan

Draft Environmental Impact Statement



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**DRAFT RESOURCE MANAGEMENT PLAN
AND
ENVIRONMENTAL IMPACT STATEMENT
FOR THE
FORT GREELY MANEUVER AREA
AND
FORT GREELY AIR DROP ZONE**

Lead Agency: U.S. Department of Interior, Bureau of Land Management

Cooperating Agency: U.S. Army, 6th Infantry Division (Light)

Type of Action: Administrative

Abstract: This document presents six alternative resource management plans for the Fort Greely Maneuver Area and Air Drop Zone. The Military Lands Withdrawal Act of 1986 establishes the primary uses of this land as military maneuvering, training, and testing. The alternatives in this plan present a variety of combination of proposals addressing the issues of military use, economic development, recreation, wildlife habitat, and access. The "no action" alternative would continue current management. The other alternatives represent a range of choices favoring military use, habitat protection, recreation, and economic development.

There is a ninety-day comment period for the public to review and convey their opinions on this document. Comments will be accepted until December 1, 1988 at:

Military Withdrawals Planning Team
Office of Management, Planning and Budget (918)
Bureau of Land Management
Box 13
701 C Street
Anchorage, Alaska 99513

Those who wish to comment by phone may call Jim Ducker, the team leader at (907) 271-5595.

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July 15, 1988

Dear Reader,

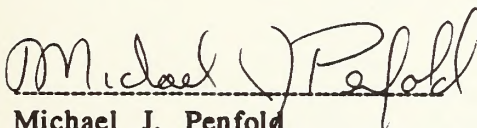
The planning effort reflected in this draft report is a first step to fulfilling the mandate of the Military Lands Withdrawals Act of 1986. The document is the result of work by a joint BLM-Army planning team. It acknowledges the primary military purpose of the withdrawn lands, yet it presents a variety of alternatives for nonmilitary uses.

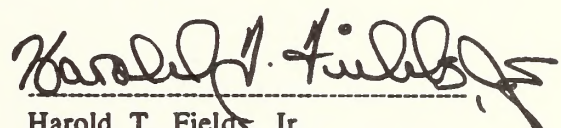
The alternative ultimately chosen as a part of this planning effort will guide management of nonmilitary activity on these lands until the withdrawal expires in 2001. Consequently, your comments on the options presented in this document could have ramifications into the next century. *We urge you to consider the alternatives carefully and forward written comments to:*

Military Withdrawals Planning Team
Office of Management, Planning and Budget (918)
Bureau of Land Management
Box 13
701 C Street
Anchorage, Alaska 99513

You also may make comments by calling Jim Ducker, the team leader, at (907) 271-5595 by December 1, 1988, or by attending public meetings at Delta Junction on November 15, 1988 or at Fairbanks on November 16, 1988.

All comments received within the ninety-day comment period, which ends December 1, 1988, will be addressed in the final RMP/EIS, which is scheduled for completion in June 1989. You should retain this draft document, because portions of it may not be reproduced in the final RMP/EIS.


Michael J. Penfold
State Director
Bureau of Land Management


Harold T. Fields, Jr.
Major General, U.S. Army
Commanding

EXECUTIVE SUMMARY

This draft Resource Management Plan/Environmental Impact Statement was prepared in accordance with the Military Lands Withdrawal Act of 1986. It recognizes the primary military role of these lands and presents alternative management direction for nonmilitary uses consistent with the withdrawal's major purpose. The issues addressed in this document--military use, economic development, recreation, wildlife habitat, and access--as well as the criteria for preparing the plan, benefited from public comment in the late summer of 1987.

This volume poses six alternative management scenarios.

Preferred Alternative

The Preferred Alternative seeks to maintain the public's current access to the withdrawal and examine ways to promote use of forest, recreation, and mineral values without undermining the military's mission.

Alternative A

Alternative A is the "no action" alternative, which would provide essentially the same management which currently exists on the withdrawal.

Alternative B

Alternative B presents a program which gives the military the greatest flexibility to use the withdrawal without interference from nonmilitary users.

Alternative C

Alternative C emphasizes protection of Fort Greely's wildlife habitat.

Alternative D

Alternative D promotes recreational use of the withdrawal.

Alternative E

Alternative E offers a series of actions designed to enhance the economic benefits derived from the withdrawn lands.

EXECUTIVE SUMMARY

The first section of the report discusses the background and objectives of the study. It highlights the importance of understanding the factors that influence the behavior of the system under investigation. The second section presents the methodology used in the study, including the data collection and analysis techniques. The third section discusses the results of the study, showing the relationship between the variables and the system's behavior. The fourth section provides a conclusion and recommendations for future research.

The study was conducted in a laboratory setting.

1. Introduction

The purpose of this study is to investigate the factors that influence the behavior of the system under investigation. The study is organized as follows: Section 1: Introduction; Section 2: Methodology; Section 3: Results; Section 4: Conclusion and Recommendations.

2. Methodology

The methodology used in this study includes the following steps: (1) Data Collection; (2) Data Analysis; (3) Results Interpretation.

3. Results

The results of the study show that the behavior of the system is significantly influenced by the factors investigated. The relationship between the variables is as follows: (1) Variable A is positively correlated with Variable B; (2) Variable C is negatively correlated with Variable D.

4. Conclusion and Recommendations

The study concludes that the factors investigated have a significant impact on the behavior of the system. The following recommendations are made for future research: (1) Further investigation into the relationship between the variables; (2) Development of a model to predict the system's behavior.

5. References

The following references are cited in this study: (1) Smith, J. (2001). The behavior of the system. (2) Jones, K. (2002). The relationship between the variables.

6. Appendix

The appendix contains the following information: (1) Raw data; (2) Calculations; (3) Graphs and Figures.

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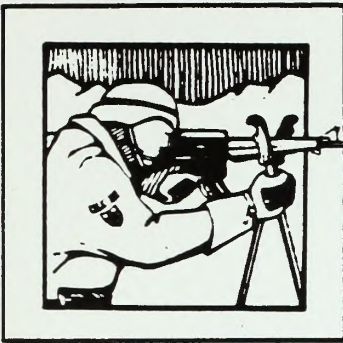
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LIST OF ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
ANILCA	Alaska National Interest Lands Conservation Act
BLM	U.S. Bureau of Land Management
CFR	Code of Federal Regulations
DBH	diameter at breast height
DOI	Department of the Interior
EIS	Environmental Impact Statement
F&WS	U.S. Fish and Wildlife Service
F.M.	Fairbanks Meridian
GVW	Gross Vehicle Weight
HMP	Habitat Management Plan
NEPA	National Environmental Policy Act
ORV	off-road vehicle
P.L.	Public Law
RAMP	Recreation Activity Management Plan
RMP	Resource Management Plan
RS	Revised Statute
TAGS	Trans-Alaska Gas System
TAPS	Trans-Alaska Pipeline System
VRM	Visual Resource Management



INTRODUCTION



- | | |
|---|-----------------------------|
| 1 | Purpose and Need for Action |
| 1 | Location |
| 2 | Issues |
| 4 | Scope of Planning Document |
| 5 | Criteria |
| 6 | Preliminary Injunction |

Introduction

Purpose and Need for Action

This plan is designed to determine the appropriate mix of nonmilitary activities and uses which parts of Fort Greely can support, while at the same time permitting the military's important training and testing functions. The Bureau of Land Management (BLM) undertook this planning effort at the direction of Congress. The Military Lands Withdrawal Act of 1986 (P.L. 99-606) required the Department of the Interior (DOI) to prepare land use plans for the Fort Greely Maneuver Area and the Fort Greely Air Drop Zone by November 6, 1989. This legislation renewed the withdrawal on these lands which were originally withdrawn in 1961. The new withdrawal is for fifteen years for "military maneuvering, training, and equipment development and testing." Congress called upon the DOI to develop a plan for the life of the withdrawal which recognized the preeminence of the military's mission, yet included provisions necessary for "proper management and protection of the resources and values" on the withdrawn lands. It specifically suggested that the plan address the possibilities for wildlife and wildlife habitat protection, recreational use, and mineral development.* Upon adoption of the plan, BLM and the Army will draft a Memorandum of Understanding to implement the plan.

Location

The Fort Greely withdrawal consists of two tracts--the Fort Greely Maneuver Area of nearly 572,000 acres and the Fort Greely Air Drop Zone covering almost 52,000 acres--which are split by the Richardson Highway south of Delta Junction. The Maneuver Area stretches thirty to forty miles west of the highway to the Little Delta River and its tributaries, the West Fork Little Delta River and Buchanan Creek. The northern and southern boundaries are diagonal lines varying from a little over twenty miles apart in the east to about thirty-five miles apart in the west. The Delta River flows northward through the extreme eastern portion of the Maneuver Area. It separates the readily accessible area to the east, with its gun ranges and installations, from the roadless area in the west.

* The act also calls for consideration of continuation of grazing. However, grazing does not occur on Fort Greely. Similarly, some topics normally addressed in resource management plans and environmental impact statements, such as prime and unique farmlands, wild horse and burro management, and land acquisition are not discussed because the resource does not exist on, or the action is inappropriate given the nature of, the withdrawal.

In general the terrain varies from lake-dotted, open, and rolling country in the north and east to rugged, mountainous terrain in the south and west. The Air Drop Zone is an area about fifteen miles north to south, and ten miles east to west. It lies east of the Richardson Highway and west of Granite Creek. Its northern and southern boundaries zigzag on section lines, the former within a couple miles of the Alaska Highway and the latter in the foothills of the Alaska Range. Jarvis Creek runs northward near the center of the area. Rough dirt roads provide access to many portions of the drop zone.

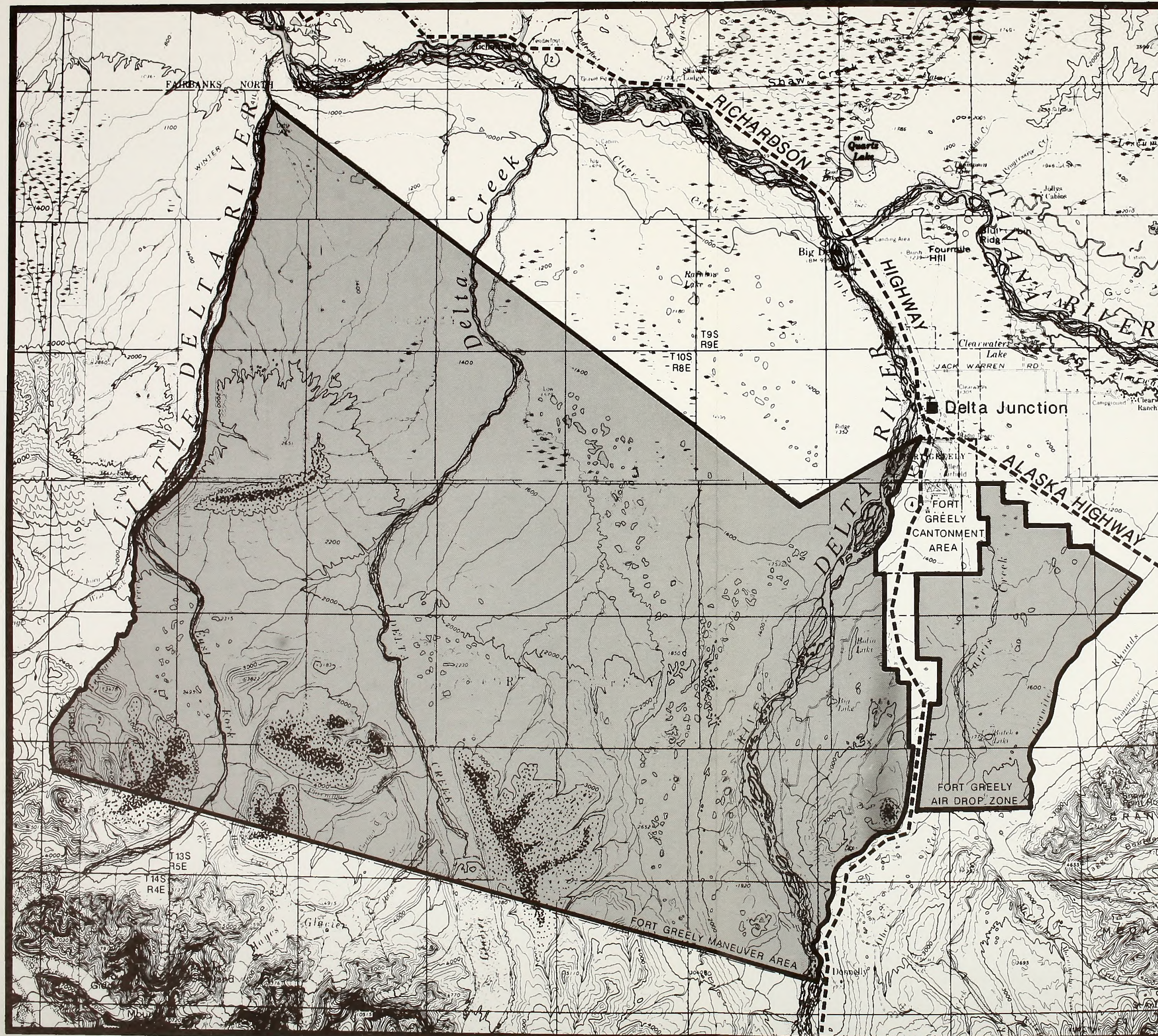
Issues ---

This draft Resource Management Plan focuses on resolving issues. An issue for this withdrawal is a perceived concern, need, problem, conflict, or opportunity related to the use or management of Fort Greely's lands and resources. Issues for this plan are constrained by the withdrawal legislation which stated that military use is to remain predominant. The issues described below--military use, economic development, recreation, wildlife and habitat, and access--are derived from a review of existing planning and management documents, suggestions from interdisciplinary planning team members, BLM and Army policy and management, and public comment. The discussion below gives the background for each issue and a set of questions focusing on specific points related to the issue.

Military Use

The withdrawal is used for a variety of military purposes described in some detail in Chapter 3. These require facilities such as firing ranges, impact areas, landing strips, and training and maneuver areas. Future military use may require changes to existing facilities or additional facilities. Military and other human intrusions can disrupt wildlife and their habitat. Several archeological and historical sites exist within the withdrawal, and continued protection of these sites precludes some military uses. While this plan cannot plan for or restrict future necessary military activities, it can recommend those steps the military should take to protect resource values, and it can determine actions which should be taken to enhance the military's ability to use the lands.

1. What areas or resources are especially sensitive or important and merit special protection from military activities?
2. What measures should the military take to minimize its adverse impact on resources?



Fort Greely

Military Withdrawal

DRAFT

Resource Management Plan

DRAFT

Environmental Impact Statement

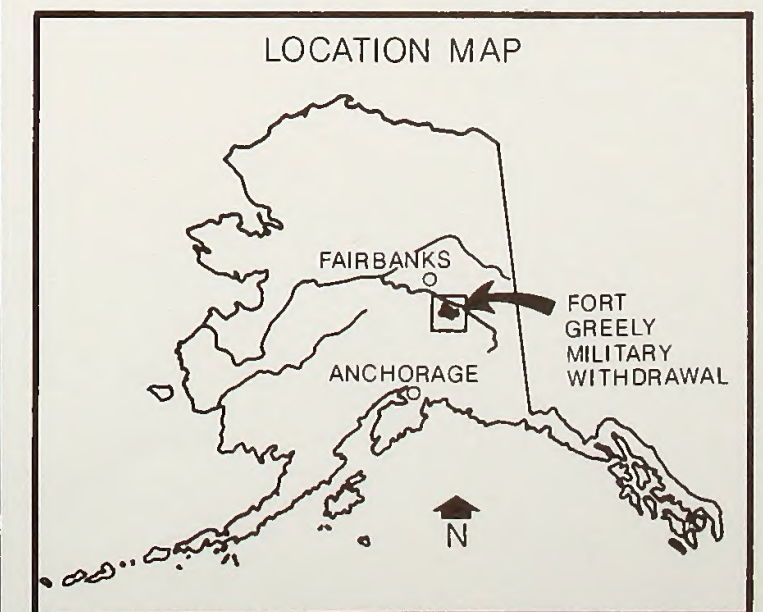
AREA MAP

 Fort Greely
Military Withdrawal

 Elevations greater than
3,000 feet

SCALE
0 5 10 MILES

0 5 10 KILOMETERS



3. How can hazardous wastes, if any, be identified, and how can the public be protected from them?
4. Which archeological and historical sites should be excavated or relocated to allow for military use of these areas?

Economic Development

The withdrawal is closed to mineral entry and location, and to mineral leasing. Section 12 of the Military Lands Withdrawal Act of 1986 instructs the Secretary of the Interior, with the concurrence of the Secretary of the Army, to determine which lands are suitable for opening to the operation of the Mining Law of 1872, the Mineral Lands Leasing Act of 1920, the Mineral Leasing Act for Acquired Lands of 1947, the Geothermal Steam Act of 1970, or any more such acts. There also is public interest in the commercial use of the Fort Greely withdrawal for guiding, trapping, and forest products.

1. Should exploration and development of locatable, leasable, and salable minerals be allowed, and under what conditions and mitigating measures?
2. In what areas and under what physical and environmental conditions should forest products be made available?
3. In what areas and under what circumstances should opportunities for guiding, trapping, and other commercial activities be allowed?

Recreation

Hunting, fishing, and trapping are major recreational uses of Fort Greely. The withdrawal contains the largest variety of mammalian game, furbearers, waterfowl, and upland game birds of any military area in the country. There are few native game fish, although about a dozen lakes are stocked with nonreproducing salmonid populations, as well as grayling and sheefish. To a lesser degree, nonconsumptive uses of the withdrawal are evident. Such uses include viewing wildlife and riding off-road vehicles.

1. To what extent can recreational activities be accommodated in the withdrawal?
2. What, if any, recreational facilities are needed and appropriate for the withdrawn lands?

Wildlife and Habitat

In July 1986, the U.S. Army's 6th Infantry Division (Light), the U.S. Fish and Wildlife Service, and the Alaska Department of Fish and Game signed a cooperative agreement for managing fish and wildlife resources on Fort Greely and other

Army installations in Alaska. The agreement requires resource inventories and management planning, and establishes principles concerning hunting and fishing.

1. What time and location restrictions should there be on military activities to protect wildlife and habitat?
2. What nonmilitary activities are consistent with wildlife and habitat protection and enhancement?
3. What steps should be taken to improve or expand the bison calving grounds which are deteriorating from over-grazing?
4. What steps should be taken to protect sharptail grouse dancing grounds?
5. What steps should be taken to protect caribou calving grounds?

Access

The type of public access and the extent and purpose of any access within the withdrawal needs to be addressed. Any development of recreation or economic opportunities will require access.

1. What access should be provided for consumptive and nonconsumptive resource uses?
2. For what areas should ORV use be permitted, prohibited, or limited?
3. To what extent can recreational use via aircraft be accommodated?

Scope of the Planning Document ---

The identification of these issues does not diminish the need to address the impact of management decisions on all other resources. The resource management plan is guided by the issues, but it must be comprehensive in its scope. Consequently, while Chapter 1 will focus on the alternate scenarios for addressing the issues, Chapter 2 will give a summary of all the affected environment and Chapter 3 will consider the alternatives' impacts on the environment's broad spectrum of values.

Criteria

The following criteria were used in the development of the resource management plan. They helped direct the planning effort in compliance with all applicable laws, regulations, and policies. The planning team submitted these criteria for public comment through a Notice of Intent and a widely distributed brochure in July 1987, and in public meetings at Delta Junction and Fairbanks in the following month.

1. All nonmilitary activities on the withdrawals will be subject to conditions and restrictions necessary to permit military use of the land.
2. Valid existing rights will be protected.
3. The plan will consider plans and policies of adjacent land owners and local governments.
4. The plan will consider wildlife and wildlife habitat, control of predatory and other animals, recreation, prevention and appropriate suppression of fires from nonmilitary activities.
5. Wildlife and wildlife habitat will be managed consistent with a 1986 cooperative agreement between the Army, the Alaska Department of Fish and Game, and the U.S. Fish and Wildlife Service.
6. The plan will consider opening of lands to the mining laws.
7. Public access needs will be addressed, though military necessity, security, and public safety dictate that general public access will not be permitted on certain portions of the withdrawals.
8. Subsistence uses and needs will be considered in accordance with Sec. 810 of the Alaska National Interest Lands Conservation Act.
9. The plan will make no wilderness suitability recommendations.
10. The plan will utilize existing data, information, plans, and land use analyses.
11. BLM and the military will cooperate in preparing the plan which will be limited to resources and uses under BLM's administration and control.

12. The plan will specify decisions to the maximum extent practical and minimize the preparation of more specific activity plans.

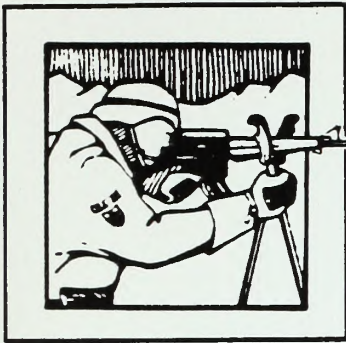
13. The plan will not address contamination by military weapons and their decontamination as issues. Sec. 7 of the Military Lands Withdrawal Act establishes the Army's responsibilities for these actions.

Preliminary Injunction

On February 10, 1986, Judge John H. Pratt issued a preliminary injunction order in the National Wildlife Federation v. Burford, et al., Civil Action No. 85-2238 (D.D.C. 1985). This injunction, effective February 15, 1986, enjoined the Bureau of Land Management from:

- "a. modifying, terminating, or revoking, in full or in part, under the Federal Land Policy and Management Act, any withdrawal or classification that was in effect on January 1, 1981, or
- b. taking any action inconsistent with the specific restrictions of a withdrawal or classification in effect on January 1, 1981, including, but not limited to, the issuance of leases, the sale, exchange, or disposal of land or interests in land, the granting of rights-of-way, or the approval of any plan of operations."

This military withdrawal may be affected by the lawsuit. Implementation of recommendations in the final plan may be affected by order(s) of the court.



CHAPTER 1 ALTERNATIVES

7	Introduction
7	Military Activities and Constraints on Alternatives
8	Management Common to All Alternatives
15	Preferred Alternative
25	Alternative A
29	Alternative B
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Chapter 1

Alternatives

Introduction

Both the National Environmental Policy Act (NEPA) and BLM's resource management planning regulations require the formulation of alternatives in the development of land management plans. Each alternative in this document represents a complete and reasonable plan to guide future management of public land and resources. Each alternative identifies and presents for public comment, combinations of public land uses and resource management practices that address the issues. One alternative, Alternative A, represents "no action." As defined in the planning regulations (43 CFR 1610.4-5), no action means a continuation of present levels or systems of resource use. The other alternatives provide a range of choices, in management emphasis.

Military Activities and Constraints on Alternatives

The Military Lands Withdrawal Act of 1986 mandates that the Department of the Interior plan for nonmilitary use and resources of the withdrawal. The alternatives presented here focus on the nonmilitary potential of the Fort Greely withdrawal; they do not propose various scenarios for the military's conduct of their mission. In accordance with the Act, the alternatives recognize the military's primary role on the land. Consequently, the planning team has limited all alternatives to those nonmilitary uses and resources which are viable within the constraints necessary for protecting national security, ensuring public safety, and providing for foreseeable military requirements for training, testing, and maneuvering.

Impact Areas

All alternatives are limited by the military's past use of parts of Fort Greely. There are five contiguous impact areas--Oklahoma, Delta Creek, Lakes, Mississippi, and Washington. The military has fired weapons into these areas since at least the 1960s. Some of the ordnance has produced, and continues to produce, unexploded duds. Disturbance can cause these duds to explode. The Air Force intends to use laser and laser-guided weapons on the Oklahoma Impact Area. Lasers can damage

vision if they strike the eye. The military rarely enters the impact areas, and does so only after taking stringent precautions. Under similar controls and conditions, and within the parameters of the various alternatives some nonmilitary users may gain access to these areas. However, because of the dangers inherent in traveling on these lands and the wide and unpredictable areas needed for casual uses such as hunting, fishing, and trapping, none of these or any other casual or recreational activities would be allowed under any alternative in the impact areas.

Maneuver Areas Uses of other portions of Fort Greely would be limited by the various intermittent, and occasionally extensive, training and testing activities the Army and Air Force conduct on the withdrawn lands. Currently, there are about six hundred soldiers of the 6th Infantry Division (Light) stationed at Fort Greely. These troops along with full-time active duty soldiers and reservists and National Guard members from Alaska and the Lower 48 train on the withdrawn lands annually. Most training occurs east of the Delta River, but some large actions, particularly in the winter, occur west of the river, normally in the area north of the impact areas.

The Army permits the Air Force to conduct training and testing missions above Fort Greely. The Air Force trains over the part of the withdrawal west of the Richardson Highway more than two hundred days annually. Air-to-ground firing is directed at the Oklahoma Impact Area, but during portions of four weeks each year air-to-air training increases the risk outside the impact areas. During these periods no one should be on the ground in most of the area west of the Delta River.

Management Common to All Alternatives

**Management
Actions**

The following management actions are ones which BLM and the Army consider appropriate to all the new alternatives proposed in the following pages and which, explicitly or implicitly, are the current policy or practice on the withdrawal. In some cases these action statements stand on their own; in some instances statements in the various alternatives give further direction in how they are to be accomplished.

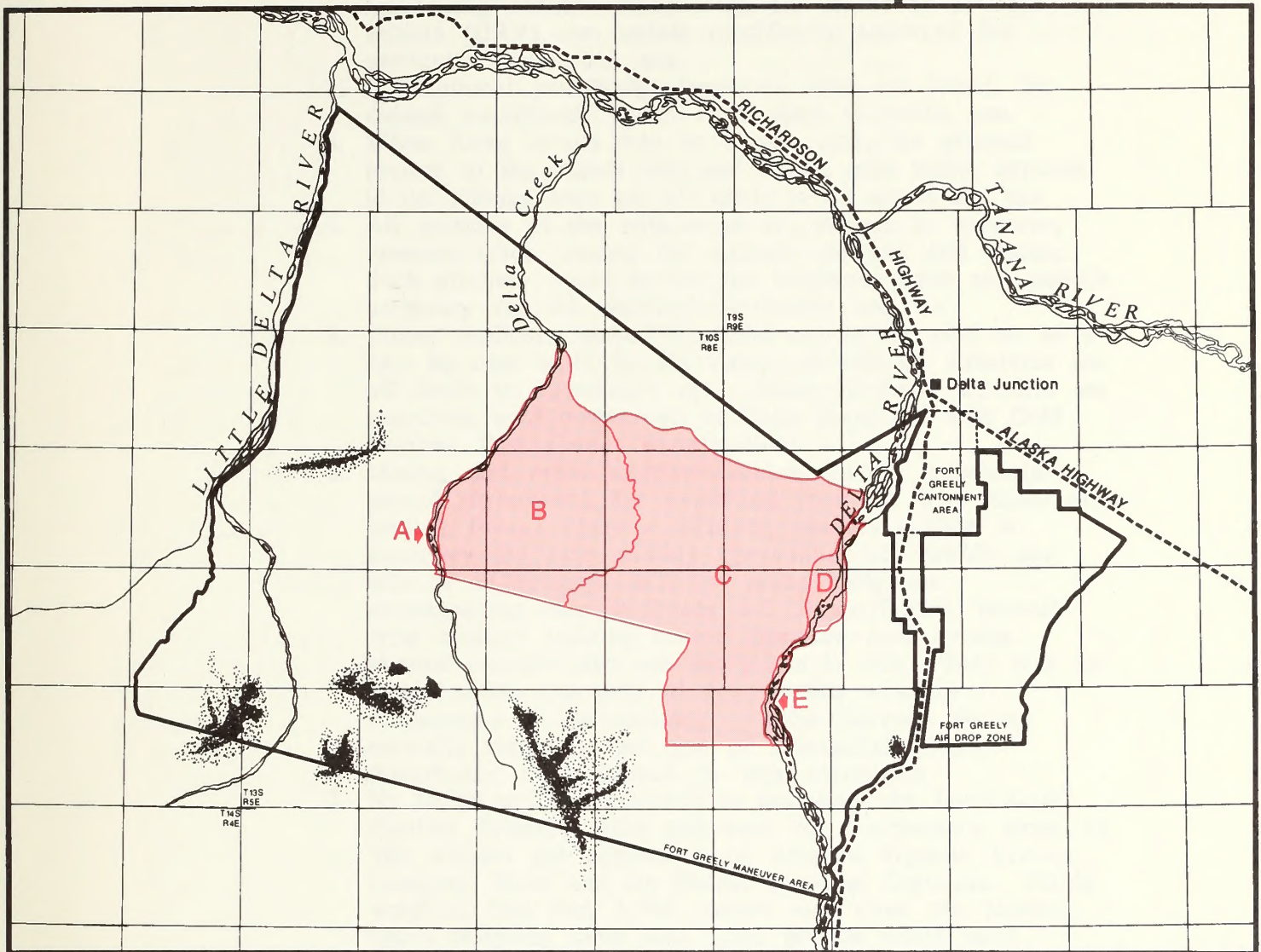
Access

1. Due to the dangers of unexploded munitions inherent in impact areas, the Washington, Mississippi, Delta Creek, Lakes, and Oklahoma Range impact areas are closed to all public access and use. (See Closed Areas map.) Noncasual uses, such as mining, timber harvest, and scientific investigations, may be conducted in these areas if they are allowed by the plan and if they are approved by the

Fort Greely

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Closed Areas



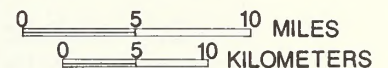
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Closed to all nonmilitary activities:

- A-Delta Creek Impact Area
- B-Oklahoma Impact Area
- C-Lakes Impact Area
- D-Mississippi Impact Area
- E-Washington Impact Area

SCALE



LOCATION MAP



- authorizing officer. These areas are closed to off-road vehicle (ORV) use, unless specifically approved for particular noncasual use.
2. If additional potentially dangerous sites are found, the federal government would close them to public use.
 3. When firing occurs into an impact area, the affected portion of the impact area and a two mile buffer adjacent to the affected tract are off limits to all access and use.
 4. All portions of the withdrawal are subject to temporary closures when needed for military training and testing. Such closures would be for the minimum areas and periods necessary for the military's exclusive use.
 5. Unless explicitly opened to public use by the plan or, on a case by case basis, by the Army, all military structures are off limits to nonmilitary use. Many of these structures are associated with ranges east of Delta River and with Cold Regions Test Center investigations.
 6. Mining and other activities which involve substantial ground disturbance are prohibited from all drop zones and landing fields, where a relatively smooth surface is necessary for safe military operations, and within one mile of all existing roads and major trails (see accompanying map of Roads and Major Trails), because most military training occurs near the road system. Mineral material sites are exceptions to this. They may be placed within one mile of extant roads with the concurrence of the military. Timber harvests do not normally result in the type of substantial ground disturbance contemplated in this restriction.
 7. No ORVs would be allowed to run along the Trans-Alaska Pipeline System's work pad used for maintenance along its line without the permission of Alyeska Pipeline Service Company, BLM, and the District Corps of Engineers. ORVs weighing less than 1,500 pounds may cross the pipeline. ORVs weighing more than 1,500 pounds would need approval to cross the pipeline.

**Air, Soil, Water,
and Vegetation**

Nonfederal uses of the withdrawal must conform with applicable federal and state laws and regulations concerning protection of air, soil, and water. Federal uses would comply with federal law, and with state law to the extent consistent with the federal mission.

All proposed activities, military and nonmilitary, for the withdrawn lands are evaluated under the authority of Army Regulation 200-2 and NEPA for impact on air, soil, water, and vegetative resources.

Application of all herbicides and pesticides would only be conducted in accordance with the Fort Greely Pest Control Plan and all applicable laws and regulations.

**Fish and Wildlife
Habitat**

Pursuant to the Sikes Act, the 6th Infantry Division (Light) has entered into a Cooperative Agreement with the U.S. Fish and Wildlife Service (F&WS) and with the Alaska Department of Fish and Game (ADF&G). The agreement calls for the development of fish and wildlife management programs which, within the constraints of the Army's needs to fulfill its mission, would improve habitat, determine "the extent of equitable military and nonmilitary access" to harvesting and enjoyment of fish and wildlife, and arrive at a consensus on the "need and means for controlling, protecting, stocking, or restoring" desirable species.

BLM associates itself with these responsibilities through adoption of a Resource Management Plan and associated implementing Memorandum of Understanding. BLM would participate with the Army, F&WS, and ADF&G in developing these programs through a Habitat Management Plan for the withdrawal and would join as a signatory agency in any revision of the Cooperative Agreement.

The Cooperative Agreement calls for the parties to cooperatively inventory the fish and wildlife resources on the withdrawn lands. The 6th Infantry Division (Light) currently conducts or is committed to conduct the following studies during the period of this withdrawal:

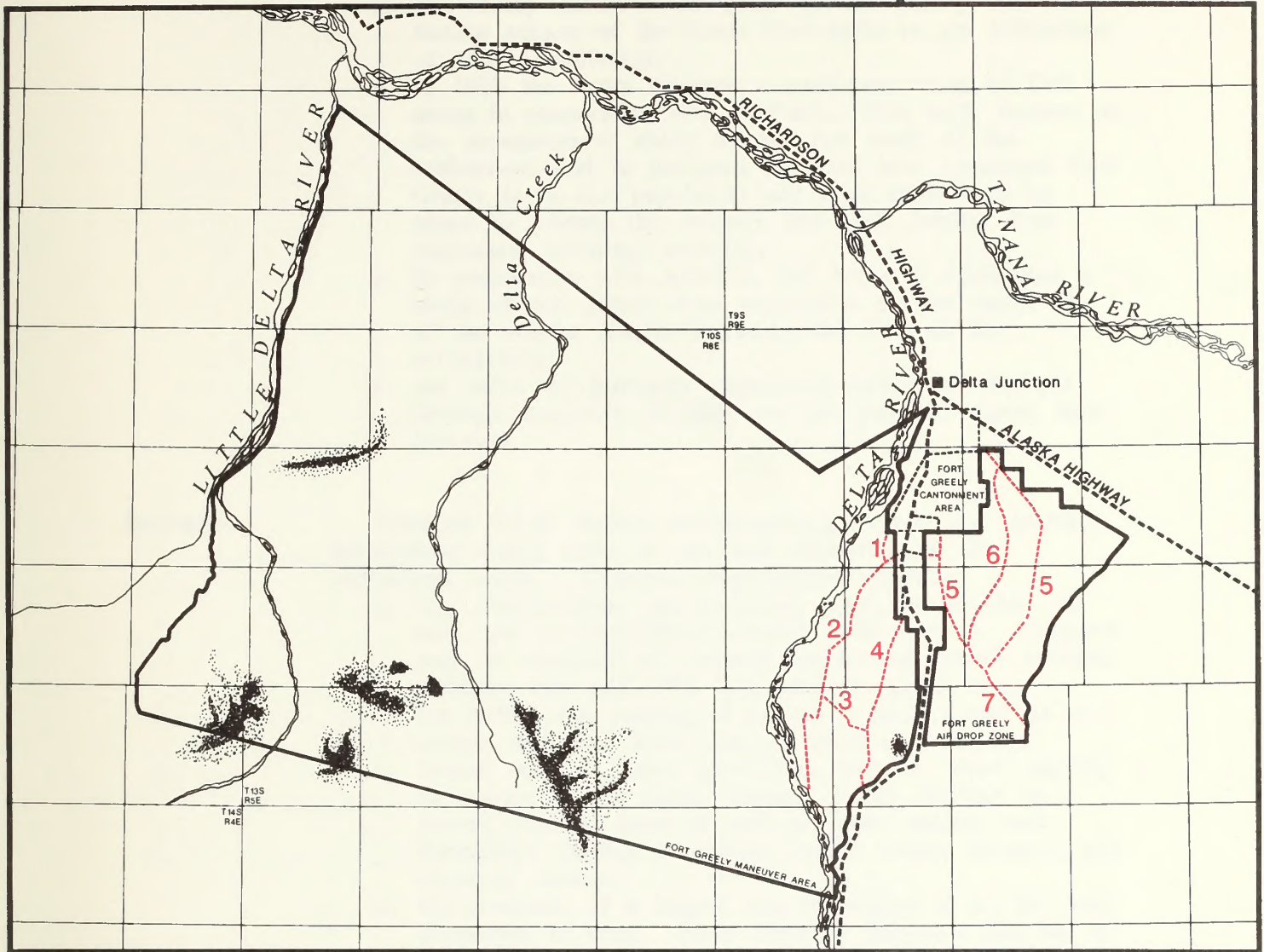
- a. The Army conducts an annual trend count of moose on part of the withdrawal west of the Delta River. In 1988 it initiated a program to monitor radio-collared moose by helicopter to better understand seasonal movements.
- b. In 1988 the 6th Infantry Division initiated a program to monitor radio-collared bison by helicopter to locate distinct herds for enumeration.



Fort Greely

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Roads and Major Trails



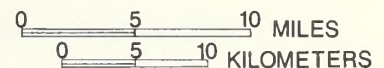
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Roads and major trails:

- 1- OP Road South
- 2- Meadows Road
- 3- Windy Ridge Road
- 4- Old Richardson Highway
- 5- 33mi. Loop Trail
- 6- 33mi. Loop Cutoff Trail
- 7- Butch Lake Trail

SCALE



LOCATION MAP



- c. The Army monitors sharptail grouse during their mating season on the bison food plots to get indications of their population.
- d. In 1988 the Army initiated a multi-year study of Dall sheep in cooperation with ADF&G. This study focuses on the population of sheep on and just south of the withdrawal and is designed to learn how important Fort Greely is to that population and what steps must be taken to protect the animals and their habitat from increased training activity.
- e. In cooperation with ADF&G, the Army is conducting a study of the grizzly bear population on the north face of the Alaska Range, including the Fort Greely withdrawal.
- f. An index of furbearer population trends is obtained through requiring trappers on the post to report their harvest.

Forestry

Common BLM timber management practices and contract stipulations would apply to any sale of timber on the withdrawn lands. Common requirements include:

- a. the construction, improvement, and maintenance of safe and environmentally sound road systems. Loggers may be required to properly locate and install culverts, stabilize cuts and fills, and properly grade roads.
- b. the felling and yarding of timber in such a way as to protect soil and water quality, residual trees, and human safety. Some provisions may be aerial yarding to protect fragile sites, limbing before yarding to protect residual trees or soil or water quality, and directional felling to protect buffer strips, streams, and adjacent stands.
- c. the treatment of a logged site to prepare it for the next generation of trees. Some ways to prepare a site are to rip compacted skid roads, abandoned haul roads, and landings and to scarify, slash, pile, and underburn the logged site.
- d. the disposal of logging slash for silvicultural and/or fire hazard reduction purposes.
- e. mitigation measures for protecting wildlife habitat. Examples of some measures are the removal of debris dams from streams, and leaving wildlife trees within a cutting area.
- f. other miscellaneous provisions, where appropriate, such as meeting minimum fire requirements and application of disease control measures.

Cultural Resources

The Army prepared a historic preservation plan (*Historic Preservation Plan for U.S. Army Lands in Alaska*) in June 1986. In accordance with Sec. 106 and Sec. 110 of the National Historic Preservation Act, the Army's plan requires that an inventory be completed before all ground-disturbing activities and, where appropriate, mitigation of cultural resources. Through this Resource Management Plan, BLM associates itself with the historic preservation plan, which would guide cultural resource management during the period of the withdrawal.

Recreation

As required by Army Regulation 420-74, the Army manages outdoor recreation on the withdrawn lands to furnish equal opportunity to the public for recreation activities and to furnish as wide a variety of recreation as conditions allow.

Rights-of-Way

There are rights-of-way on Fort Greely for a corridor for the Trans-Alaska Pipeline, which passes through the withdrawal near the Richardson Highway, and a five-acre site west of Donnelly Dome, which is used for a television transmitter. No rights-of-way would be allowed in any of the closed areas of the withdrawal.

Private individuals and the State may accept directly a congressionally granted right-of-way, if constructed prior to October 21, 1976, under the authority of Revised Statute 2477. The federal government would work cooperatively with the State to identify all rights-of-way claims made pursuant to RS 2477 on public lands for administrative purposes only. The validity of such claims can only be determined in a court of competent jurisdiction.

Minerals

Pursuant to Public Law 85-767, mineral materials (sand and gravel) may be removed from Fort Greely to help in the construction and maintenance of public highways, subject to appropriate approvals.

Measures to safeguard resource values outlined in 43 CFR 3100, 43 CFR 3600, and 43 CFR 3809 will apply to mineral development on the withdrawn lands.

Under the terms of the Military Lands Withdrawal Act of 1986, should the withdrawn lands be opened to mineral location, mineral patents would convey title to locatable minerals only. These patents would also carry the right to use as much of the surface as is necessary for mining under the guidelines established by the Secretary of the Interior by regulation.

If coal leasing is considered during the life of this plan, the coal unsuitability criteria found in 43 CFR 3461 would be applied to determine areas available for coal leasing. No coal

applications are likely during the life of this plan; there is no present interest in coal development. A plan amendment or revision would be developed if and when an application is received.

Subsistence

The federal government would follow the procedural requirements mandated by Section 810 of ANILCA where appropriate in the development of any additional discretionary plans or actions affecting all or portions of the military lands.

Preferred Alternative

The actions prescribed in the Preferred Alternative preserve the primary function of the withdrawal--military training and testing--and allow economic development and continued recreational activities within certain environmental constraints. The military's need for large tracts of undisturbed lands, the healthy state of the withdrawal's current habitat, the rather modest prospects for economic development, and the desirability of emphasizing undeveloped recreational activities in most of the withdrawal make such a diverse multiple use plan particularly attractive. The alternative also recognizes the critical safety questions, both for civilians and soldiers, inherent in utilizing areas in which troops train with live ammunition and on which munitions are tested and have been tested for decades.

Management Actions

The following actions are consistent with achieving this goal.

Access

Preferred Action 1

The public may enter the post after gaining permission from the Army at Fort Greely. This pertains to all forms of access. They are expected to comply with all rules concerning restricted access and permanently and temporarily closed portions of the withdrawal.

Rationale: This provision helps the military to know where people are on land they may wish to train on and provides an opportunity to inform the public of restricted and dangerous areas.

Preferred Action 2

The public may use unimproved remote landing areas after complying with notification requirements and provided that this use does not interfere with military activities or incur liability to the federal government. (Note: Allen Airfield is not located in the withdrawn area addressed by this plan. Use of Allen Airfield is governed by other regulations.) Similarly, the public may land on lakes in the withdrawal.

Rationale: Hunters commonly use these areas and continued access would aid recreationists and can help developers of the withdrawal's resources.



Preferred Action 3

All development actions and military actions to the extent consistent with military needs in the caribou calving grounds would be conducted under winter conditions in which there is sufficient snow cover and the ground is adequately frozen so as to minimize damage to the vegetation and soils. The caribou calving grounds are defined in an appendix to the cooperative agreement between the Army, the Fish and Wildlife Service, and the Alaska Department of Fish and Game. (See the accompanying Caribou Calving Area map.) The Habitat Management Plan mandated by the cooperative agreement between the Army, the F&WS, and the ADF&G should give more specific descriptions of permissible and impermissible activities.

Rationale: This action would ensure that the caribou population would not be endangered by degradation of its crucial calving habitat. It offers a somewhat higher level of protection than that incorporated in the cooperative agreement. These lands are seldom used by ground troops for training.

Preferred Action 4

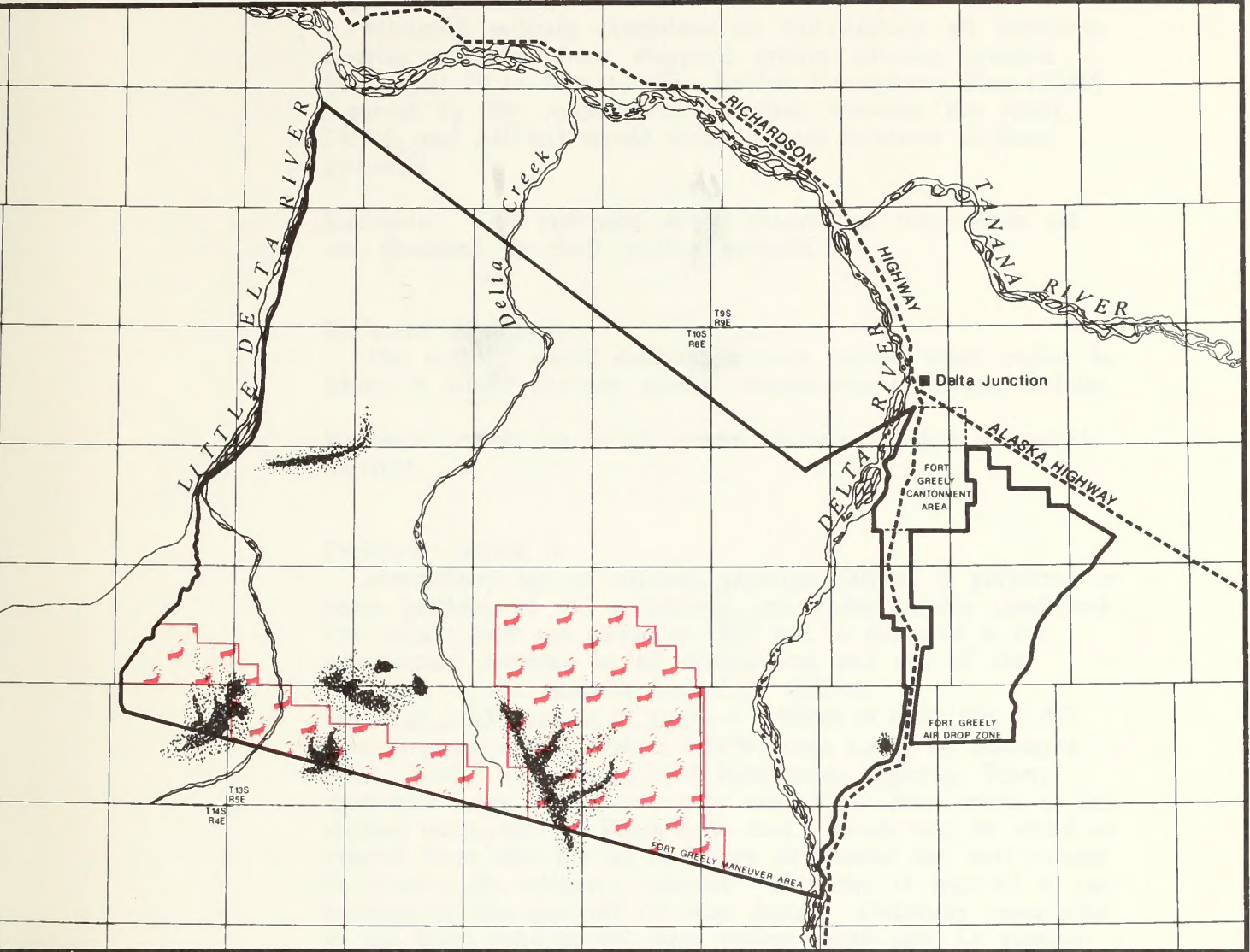
Minimize military training in crucial sheep habitat identified in a Dall sheep study begun by the Army in fiscal year 1988.

Rationale: This action would protect sheep habitat, such as mineral licks, using the most up-to-date information about the species on the withdrawal.


Fort Greely

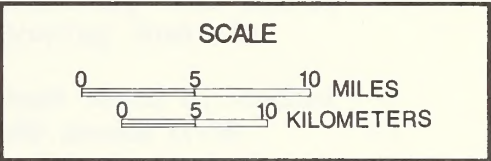
DRAFT Resource Management Plan
DRAFT Environmental Impact Statement

Caribou Calving Area



Legend

 Caribou calving area



Preferred Action 5

Minimize military operations on and exclude all disruptive civilian activities from sharptail grouse dancing grounds from April 20 to June 1. The Habitat Management Plan (HMP) required by the cooperative agreement between the Army, F&WS, and ADF&G should define precise locations of these grounds.

Rationale: This provision would ensure that these birds are not disturbed on their mating grounds.

Preferred Action 6

The military would establish a zone around water bodies in which it would institute special precautions to protect habitat.

Rationale: Such an action would minimize dangers to aquatic habitat.

Preferred Action 7

Nonmilitary use of off-road vehicles (ORVs) is permitted in some portions of the withdrawal and under certain conditions. The impact areas are closed to ORV use as indicated in the management common to all alternatives, and use of the remainder of the lands is limited as follows:

ORVs of 1,500 pounds or more -- Vehicles of more than 1,500 pounds gross vehicle weight (GVW) may travel on Meadows Road, Windy Ridge Road, Old Richardson Highway, Thirty-three-mile Loop Trail, the access roads from these roads to the stocked lakes, and the Butch Lake trail. Roads may be added or deleted from this list as necessary to protect the environment or enhance the military's mission. A permit is required to use vehicles of this size off of these routes. Generally permission to use these vehicles off these routes would only be granted when there is no danger of such use interfering with military operations, damaging the habitat, or detracting from the recreational value of the withdrawal.

ORVs of less than 1,500 pounds -- No permit would be required for nonmilitary use of ORVs less than 1,500 pounds GVW. General use of these ORVs would be limited to the roads listed above, soils with low erosion hazard, and to periods with snow cover adequate to prevent disturbance of the vegetative cover. The military may also exclude public use of ORVs in certain areas where their use would be detrimental to the military's mission.

An accompanying ORV Use map indicates the roads and trails on which all ORVs may operate and the impact areas and areas of high erosion hazard from which ORVs are

excluded. Note that the map is suggestive rather than definitive; all areas not indicated as closed should not be assumed to be open. The federal authorized officer may grant permission for a specific use of ORVs of less than 1,500 pounds in an area indicated as closed on the map or for general use of additional specific trails by such vehicles.

Rationale: The impact areas are closed to ORV use for safety reasons and in conjunction with access management direction provided by the management common to all alternatives. Larger ORVs are restricted to specific roads and smaller ORVs are restricted to areas of certain soil conditions and times of year to protect the withdrawn land's soils and vegetation.

Preferred Action 8

Maintain signs at major road and trail entrances to the withdrawal informing the public that they are entering a military withdrawal. The signs should warn of permanently closed areas.

Rationale: Some signs currently exist, but with the potential for increased public use of the withdrawal, it is prudent to place appropriate notices at all entrances.

Preferred Action 9

Appropriate signs would be erected to warn the public and prevent public access into the impact areas and other restricted areas.

Rationale: Security and safety require that the public, which can be anticipated to use the withdrawal in increasing numbers during the life of this withdrawal, be warned away from dangerous areas.

Vegetation

Preferred Action 10

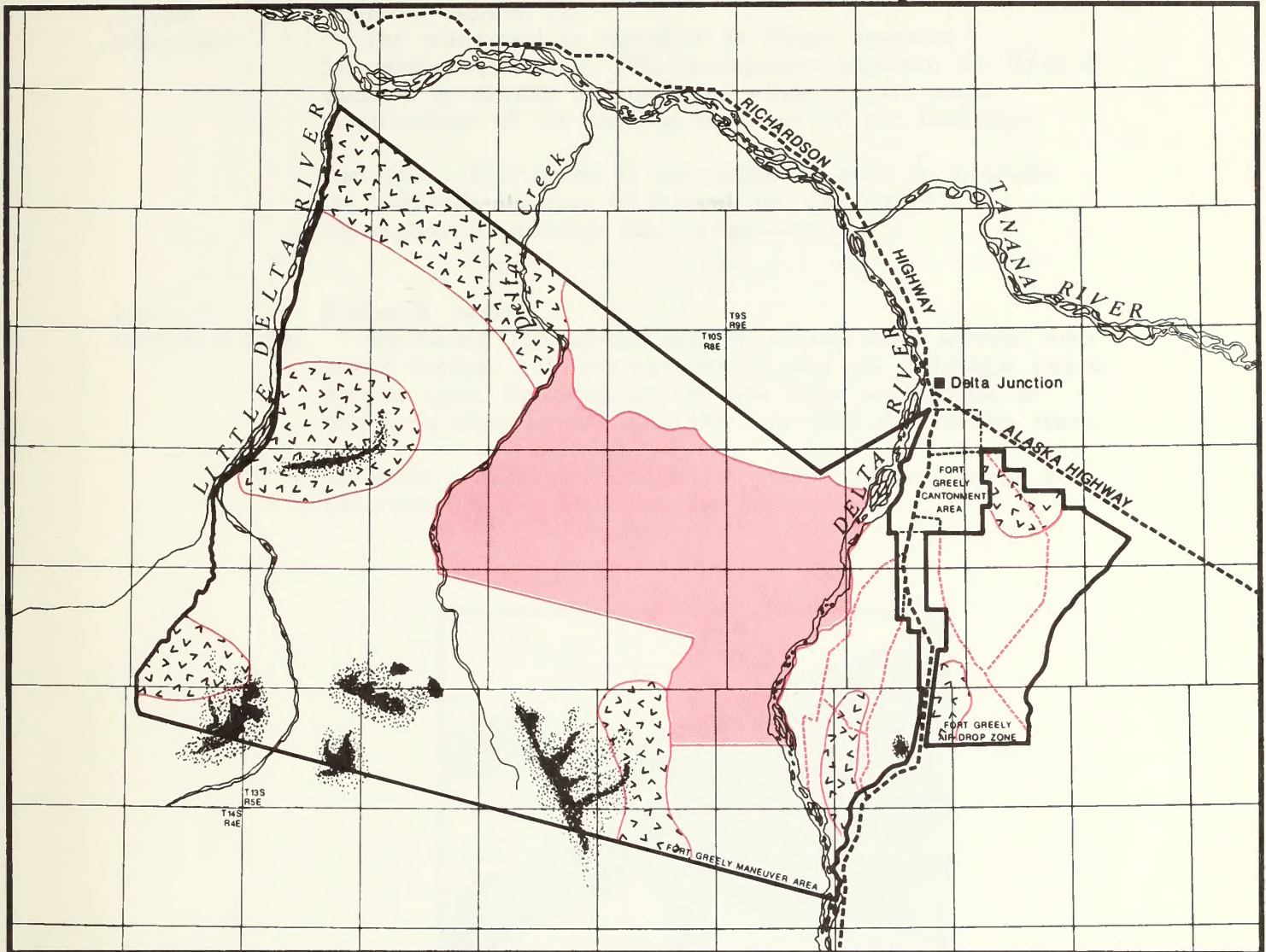
In the course of developing the military, recreational, and economic potential of the withdrawn lands, the federal government would seek to take advantage of opportunities to improve the fort's vegetation. Military and nonmilitary activities outside of the impact area would limit vegetation disturbance, particularly to wild food sources such as berries, as much as possible consistent with military needs and the goals of recreation and economic development.

Rationale: This action helps protect habitat and recreational values.

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Off Road Vehicle (ORV) Use



Legend



Roads and trails on which all ORVs may operate



Areas closed to nonmilitary ORV use at all times



Areas closed to nonmilitary ORV use during summer
During the winter ORVs generally can use these areas

Note: All areas not indicated as closed should not be assumed to be open. For example, patches of low, wet drainages or soils on steep slopes should be considered closed to ORV use.

SCALE

0 5 10 MILES
0 5 10 KILOMETERS

LOCATION MAP



**Visual
Resources**

Preferred Action 11

The withdrawal is classified as Visual Resource Management (VRM) 4. The management objective for VRM 4 areas is to provide for activities which require major modifications of the existing character of the landscape.

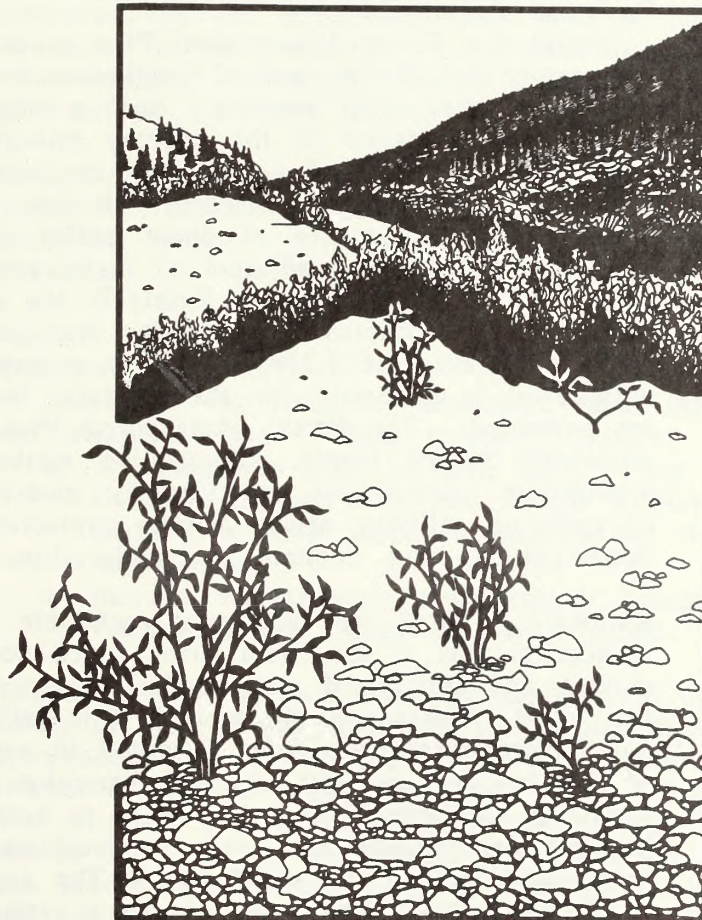
Rationale: This action is appropriate in order to maximize the military's freedom to manage the withdrawal to accomplish its mission most effectively.

**Fish and
Wildlife Habitat**

Preferred Action 12

Monitoring the calving activity of the Delta caribou herd would continue. If the herd travels into the Oklahoma Impact area to calve, the Army and the Air Force would cease or modify training in and over the area until the animals leave.

Rationale: Protection during the crucial calving period is necessary for the health of the caribou herd.



Preferred Action 13

Develop and implement a Habitat Management Plan (HMP) to manage existing habitat. In consultation with the Alaska Department of Fish and Game, the HMP should establish target populations of game animals. At a minimum the HMP should consider:

- a. what, if any, water quality control program is necessary
- b. the advisability of maintaining or creating new bison food plots for the use of bison and other species
- c. habitat manipulation to facilitate viewing of bison by visitors to the fort
- d. the effects of transportation modes on habitat and how certain types of access should be regulated.

The plan would be consistent with the military's mission.

Rationale: Lack of definitive information on wildlife and their habitats on Fort Greely hinders sound resource management. The proposed HMP should develop an information base and use it for decision-making.

Forestry**Preferred Action 14**

Develop a Forest Management Plan to determine the opportunity for the harvest of sawtimber, house logs, fuel wood, and other wood products. Such a plan must remain within the constraints of the military mission; public safety and the preservation of habitat and recreation are other values which should be considered. It may, for example, mandate the maintenance of uncut buffer strips along streams and lakes and adjacent to major recreational use roads. (It is understood that forests in the withdrawal fall under BLM's restricted category for management as outlined in BLM's Manual 1622.21A(1); that is, management of the withdrawal is primarily for the military, but timber harvests are permitted. The Forest Management Plan should address allowable harvest levels, reforestation methods, and appropriate silvicultural practices by measuring the impact of each on military needs, habitat protection, recreational opportunities, and economic considerations.)

Rationale: There are substantial accessible forests within the withdrawal east of the Delta River which could supply the current and anticipated very modest market for timber and fuel wood. Because of the market, it is unlikely that more than one hundred acres would be harvested in any year. Harvests of this size are unlikely to cause disruption of military activities, and they hold the potential to create a more varied training environment and roads to facilitate military and recreational use of the withdrawal. The small clearings which could result could also benefit a variety of game and nongame species.

**Cultural
Resources**

Preferred Action 15

Mitigate the Ptarmigan Creek cabin through Historic American Buildings Survey documentation and archeological testing, and resolve the management of the Sullivan Roadhouse. All other evaluation and mitigation would be conducted as necessary; that is when areas have been or are about to be disturbed for military operations or for recreational or other developments permitted by this plan. With the possible exception of the Sullivan Roadhouse, cultural resources should be managed for their information potential.

Rationale: The Sullivan Roadhouse is on, and the Ptarmigan Creek cabin is eligible for, the National Register of Historic Places. Otherwise, this action would limit costs of evaluation and mitigation to that necessary to respond to ground-disturbing actions, as mandated by Secs. 106 and 110 of the National Historic Preservation Act of 1966.

Recreation

Preferred Action 16

Only the federal government and private developers authorized by the government may erect or maintain structures on the withdrawal. All unauthorized or "encroachment" cabins are subject to possession by the government following proper notice.

Rationale: Unauthorized structures trespass on federal lands withdrawn for military use. In some circumstances it may be preferable to move or destroy them for safety or security reasons.

Preferred Action 17

All those who enter the withdrawn lands must comply with the military's rules. These presently require:

- a. all those who enter to hunt, fish, or trap must sign a liability release form and attend a Hunting/Trapping/Fishing briefing prior to undertaking these activities each year.
- b. hunters and trappers must submit completed harvest reports to the appropriate Army office.

Rationale: The Army's rules are designed to ensure civilians' safety on Fort Greely and maintain an information base on recreational use. The briefing describes permanently and temporarily closed areas and other safety related information. The briefing also addresses safe and environmentally proper use of ORVs on the withdrawal. Harvest reports would allow the federal government to better monitor hunter and trapper use and maintain accurate records of animal harvests on the fort. Such reports can assist in State management of wildlife.

Preferred Action 18

Guides, outfitters, and air taxi services may operate on the withdrawal, provided they comply with other regulations concerning nonmilitary use of the land. Guides, outfitters, and air taxi services are responsible for ensuring that their clients comply with these rules. Guides and outfitters must obtain a permit to use federal lands and comply with other provisions of 43 CFR 8372.

Rationale: Access to the portion of the withdrawal west of the Delta River is most easily and commonly achieved by airplane. Guides, outfitters, and air taxi services provide this access for those who do not have their own planes. Without such access much less recreational activity could occur west of the Delta River.

**Preferred Action 19**

Develop a Recreation Activity Management Plan (RAMP) to provide recreation opportunities compatible with military needs.

Rationale: Although Fort Greely offers some opportunities for recreational development, these must not compromise the military's mission. A Recreation Activity Management Plan offers a means by which the Army and BLM can consider and coordinate actions to facilitate recreation within this constraint.

Rights-of-Way**Preferred Action 20**

Rights-of-way may be granted if they do not conflict with the military's mission. They should be subject to terms and conditions to assure that military needs are met.

Rationale: Rights-of-way can assist in development of the area, but they must not compromise the primary function of the withdrawal.

Minerals

Preferred Action 21

The Bureau of Land Management would develop or request the development of a mineral assessment for the withdrawn lands outside the impact areas. This assessment would serve as a basis to determine the suitability of opening these lands to the operation of the mineral laws as contemplated in Sec. 12(a) of the Military Lands Withdrawal Act. The impact of mining on military activity would be a critical factor in determining whether to open the lands to mining; no such opening would be allowed without the concurrence of the Army. Mining activities also would be regulated to maintain Dall sheep habitat. A sheep study begun by the Army in fiscal year 1988 would help identify a threshold of disturbance. No mineral disturbance above this threshold would be permitted. At a minimum, the threshold would maintain a viable and self-sustaining population. Until there is a determination to open the lands in accordance with Sec. 12(a), the withdrawn lands remain closed to the operation of the mineral laws.

Rationale: There is little information on the mineral resources of Fort Greely or the development which may be necessary to extract the resource from the withdrawn lands. Consequently, it is not known with adequate precision what disruption mining and its attendant activities may entail for military uses of the fort. A mineral assessment would determine the availability of minerals on the withdrawn lands and allow a better understanding of the means to carry out mining without hindering the military's mission. This management direction would also help protect sheep habitat using the most up-to-date information about the species.

Preferred Action 22

Allow the sale or other disposal of mineral materials (sand and gravel). BLM would process applications for such disposals with the concurrence of the Army to ensure minimal conflict with military activities.

Rationale: Mineral materials are necessary for economic developments, such as the Trans-Alaska Gas System.

Fire Management

Preferred Action 23

The immediate environs of the Sullivan Roadhouse and specific Air Force equipment sites would be designated Critical fire suppression sites. The areas east of the Delta River (except for about four square miles of uplands east of Jarvis

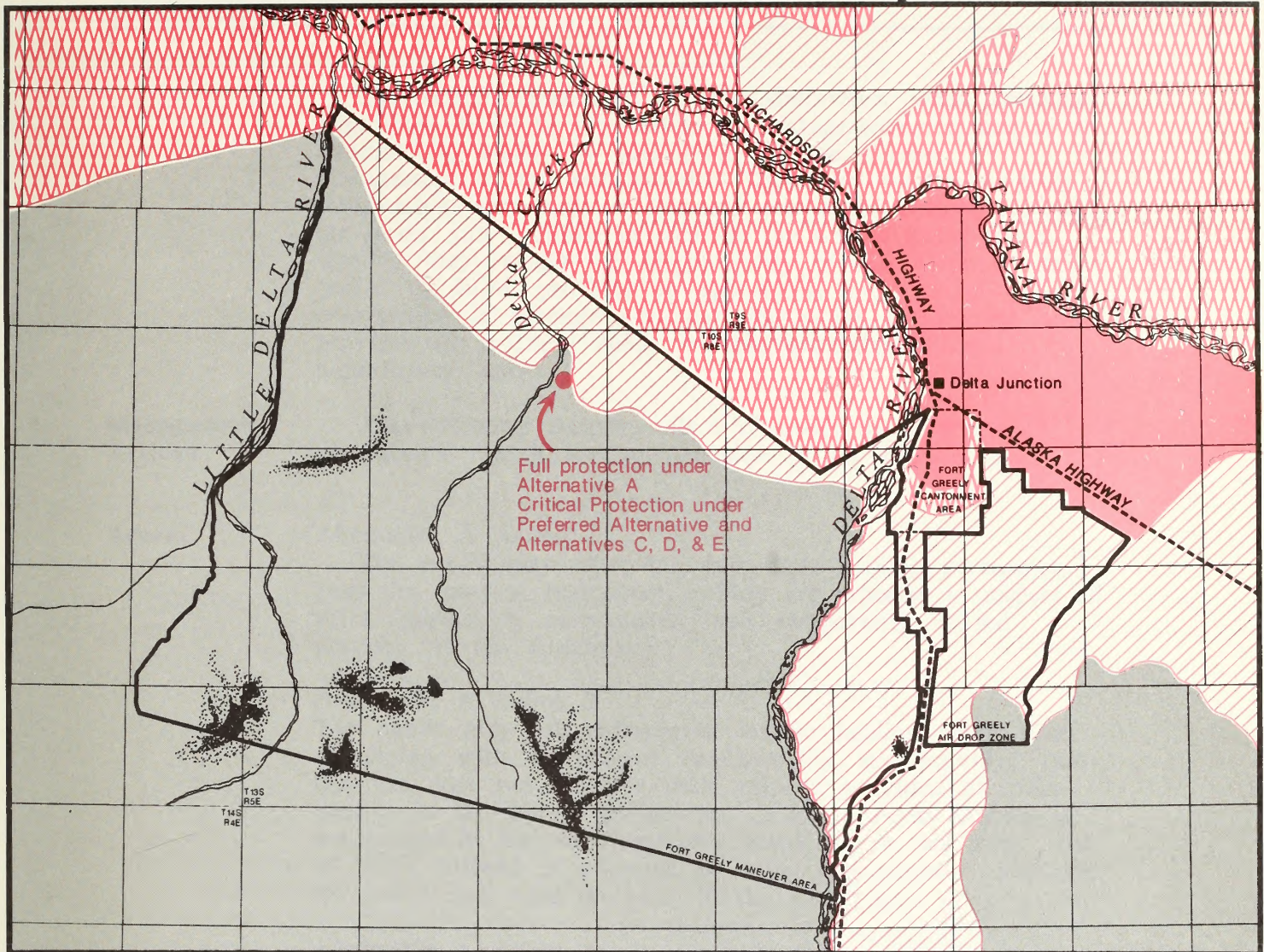
Creek), north of the impact areas, and north of a trail which extends west of Delta Creek from near the mouth of the "One-hundred-mile Creek" (which enters Delta Creek in Sec. 3, T. 10 S., R. 7 E., F.M.) would receive Modified fire suppression. The remainder of the withdrawal would receive Limited fire suppression. (See Fire Management Categories map 1.) Future changes in suppression management can be effected through the Interagency Fire Management Plan with the concurrence of the military.

Rationale: These classifications are consistent with the Interagency Fire Management Plan for neighboring lands. The Sullivan Roadhouse, which is on the National Register of Historic Places merits special protection, as do the sensitive and expensive Air Force equipment. The impact areas are to receive Limited suppression because of the dangers inherent in combatting fires in impact areas.





Fort Greely

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Fire Management
Categories 1 of 2
Preferred Alternative
and Alternatives A,C,D,&E

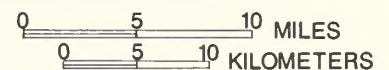


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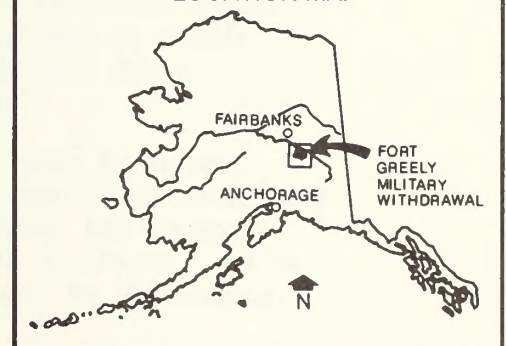
-  Critical Protection
-  Full Protection
-  Modified Action
-  Limited Action

Note: Some Air Force sites granted Critical protection are not shown for security reasons.

SCALE



LOCATION MAP



Alternative A

The actions prescribed in this alternative, when combined with those listed in the section on management common to all alternatives, renders a description of the current management of the withdrawal. Thus this alternative gives information necessary to compare the other alternatives with the *status quo*. Opting to continue the actions listed below, whether they remain the responsibility of the Army or are shared by BLM, provides an opportunity to maintain greater consistency in management than the other alternatives and provides for military needs without excluding many nonmilitary uses.

Management Actions

The following actions reflect elements of present management which are not common to all alternatives.

Access

Alternative A Action 1

The public may enter the post after gaining permission from the Army at Fort Greely. They are expected to respect all rules concerning permanently and temporarily closed portions of the withdrawal.

Alternative A Action 2

The public may use unimproved remote landing areas after complying with notification requirements and provided that this use does not interfere with military activities or incur liability to the federal government. (Note: Allen Airfield is not located in the withdrawn area addressed by this plan. Use of Allen Airfield is governed by other regulations.) Similarly, the public may land on lakes in the withdrawal.

Alternative A Action 3

Wheeled vehicles may use the roads and trails on the withdrawal. Only ATVs may operate off the roads and trails.

Fish and Wildlife Habitat

Alternative A Action 4

The Army monitors the calving activity of the Delta caribou herd. If the herd travels into the Oklahoma Impact area to calve, the Army and the Air Force cease or modify training in and over the area until the animals leave.

Alternative A Action 5

The Army maintains bison food plots with herbaceous cover by periodic brush-hogging or treatment with broad leaf herbicides. On a very limited basis the Army has created moose browse by crushing hardwoods with bulldozers, and is currently considering doing the same work by hydroaxing.

**Forestry****Alternative A Action 6**

After obtaining a permit from the Fort Greely Natural Resources Office, persons may gather dead and down timber for personal use. No live trees may be cut, except that Fort Greely residents may harvest Christmas trees.

**Cultural
Resources****Alternative A Action 7**

All inventory, evaluation, and mitigation is conducted as necessary; that is when areas have been or are about to be disturbed.

Recreation**Alternative A Action 8**

Only the federal government and private developers authorized by the government may erect or maintain structures on the withdrawal. All unauthorized or "encroachment" cabins are subject to possession by the government following proper notice.

Alternative A Action 9

All hunting, fishing, and trapping must be done in accordance with 6th Infantry Division (Light) Reg. 420-6. Its major provisions include:

- a. all those engaged in hunting, fishing, or trapping on the withdrawn lands must sign in and out with the military police.
- b. all those who enter the withdrawn lands to hunt, fish, or trap must sign a liability release form and attend a Hunting/Trapping/Fishing briefing within the calendar year.

- c. all people engaged in hunting or trapping must submit a completed harvest report to the Natural Resources Office.
- d. ORVs may be used for hunting, fishing and trapping.
- e. Guides, outfitters, and air taxi services may operate on the withdrawal, provided they comply with other regulations concerning nonmilitary use of the land. They are responsible for ensuring that their clients comply with these rules.

Alternative A Action 10

The military attempts to minimize training and testing during September (moose and small game hunting seasons) and during critical periods for wildlife.

Alternative A Action 11

Encourage continued use of the small arms military target ranges by nonmilitary users for target practice, shooting matches, and sighting-in of hunting arms when such use does not conflict with military use.

Rights-of-Way

Alternative A Action 12

Rights-of-way may be granted if they do not conflict with the military's mission. They should be subject to terms and conditions to assure that military needs are met.

Minerals

Alternative A Action 13

The withdrawal will remain closed to all mining except for mineral materials.

Alternative A Action 14

The sale or other disposal of mineral materials (sand and gravel) is allowed. BLM processes applications for such disposals with the concurrence of the Army to ensure minimal conflict with military activities.

**Fire
Management**

Alternative A Action 15

Specific Air Force equipment sites receive a Critical level of fire suppression. The Sullivan Roadhouse receive Full fire suppression. The areas east of the Delta River (except for about four square miles of uplands east of Jarvis Creek), north of the impact areas, and north of a trail which extends west of Delta Creek from near the mouth of the "One-hundred-mile Creek" (which enters Delta Creek in Sec. 3, T. 10 S., R. 7 E., F.M.) receive Modified fire suppression. The remainder of the withdrawal receives Limited fire suppression. (See Fire Management Categories map 1 in discussion of Preferred Alternative.)

Alternative B

The actions prescribed in this alternative are designed to ensure that the military has the greatest flexibility to meet increasing training needs on Fort Greely over the life of the withdrawal. Fort Wainwright is slated to receive substantial increases in military personnel over the next few years in conjunction with the deployment of the Light Infantry Division. These troops would use Fort Greely training areas at a level at least double the current use. In addition, changing emphases in Air Force training requirements may increase Air Force use of the Oklahoma and Delta Creek impact areas.

Management Actions

The following actions are consistent with achieving this goal.

Access

Alternative B Action 1

Exclude public access to the withdrawal in order to provide varied training area terrain and conditions and uninhibited use of the withdrawal by the military. (This does not exclude the deployment of fire fighting personnel requested by the military. Nor does it exclude forest products harvesters or archeologists acting in accordance with Alternative B Actions 5 and 6, respectively.)

Alternative B Action 2

Place locked gates at all road entrances to Fort Greely. Keys to these gates would be maintained by the Army. Passage through the gates would only be allowed for the furtherance of the military's mission.

Visual Resources Alternative B Action 3

The withdrawal is classified as VRM 4. The management objective for VRM 4 areas is to provide for activities which require major modifications of the existing character of the landscape.

Fish and Wildlife Habitat

Alternative B Action 4

Develop a Habitat Management Plan designed to conserve wildlife values and minimize conflicts between wildlife and military activities without restricting necessary military training and testing. The HMP should establish target populations consistent with these goals in consultation with the Alaska Department of Fish & Game.

Forestry**Alternative B Action 5**

Allow timber and firewood harvests only in cases in which they assist military activities. (It is understood that forests in the withdrawal fall under the "enhancement of other uses" category as outlined in BLM's Manual 1622.21A(1); that is, forest management is specifically for the benefit of military use.) Any forest management plan would mandate silvicultural practices and reforestation methods, if any are to be conducted, which meet military needs and provide protection to wildlife habitat.

**Cultural
Resources****Alternative B Action 6**

Mitigate the Ptarmigan Creek cabin through Historic American Buildings Survey documentation and resolve the status of the Sullivan Roadhouse. Inventory, evaluate, and, where necessary, mitigate all areas of the withdrawal. With the possible exception of the Sullivan Roadhouse, all cultural resources would be managed for their information potential.

Minerals**Alternative B Action 7**

The withdrawal would remain closed to mining, except that provided for by Public Law 85-767 concerning establishment of mineral material sites (sand and gravel) in connection with public highways.

Alternative B Action 8

The withdrawal would remain closed to all mining activity, except that provided for by Public Law 85-767. These sites would be reviewed by BLM and the Army to ensure minimal conflict with military activities.

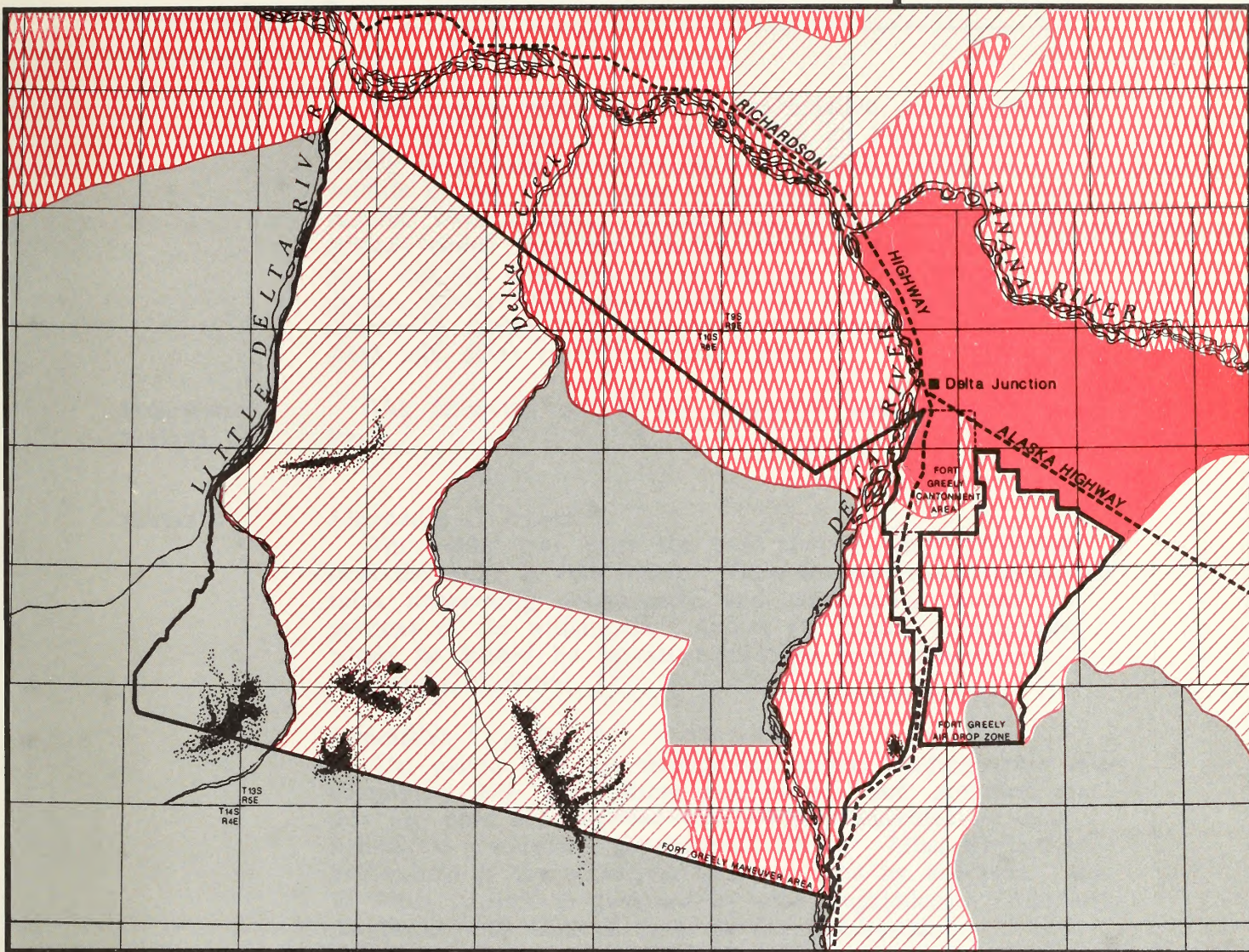
Fire Management Alternative B Action 9

Specific Air Force equipment sites would be designated Critical fire suppression areas. The impact areas and the lands west of the East Fork Little Delta River would be classified as Limited fire suppression areas. The lands between the East Fork Little Delta River and Delta Creek and its tributary known as "One-hundred-mile Creek" (which enters Delta Creek in Sec. 3, T. 10 S., R. 7 E., F.M.) would be classified as Modified fire suppression areas. The remainder of the withdrawal would receive Full suppression. (See the accompanying Fire Management Categories map 2.)





Fort Greely

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Fire Management
Categories 2 of 2
Alternative B

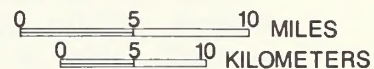


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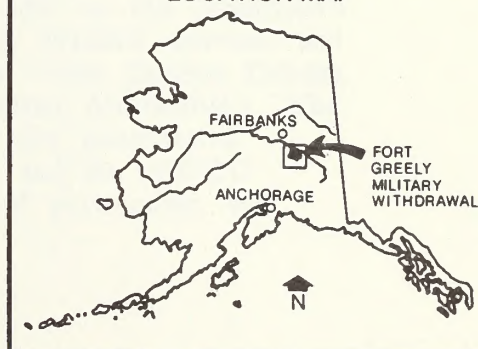
-  Critical Protection
-  Full Protection
-  Modified Action
-  Limited Action

Note: Some Air Force sites granted Critical protection are not shown for security reasons.

SCALE



LOCATION MAP



Alternative C

The actions prescribed in this alternative are designed to protect and enhance the wildlife habitat on Fort Greely. Fort Greely is probably endowed with the richest variety of wildlife of any military post in the country. The Army and ADF&G have designated certain areas of the withdrawal as critical habitat for bison, sandhill cranes, and caribou. The post also has important habitat for Dall sheep, sharptail grouse, grizzly bears, and moose. The actions described in this alternative would help preserve and improve the habitat these and other animals depend upon.

Management Actions

The following actions are consistent with achieving this goal.

Access

Alternative C Action 1

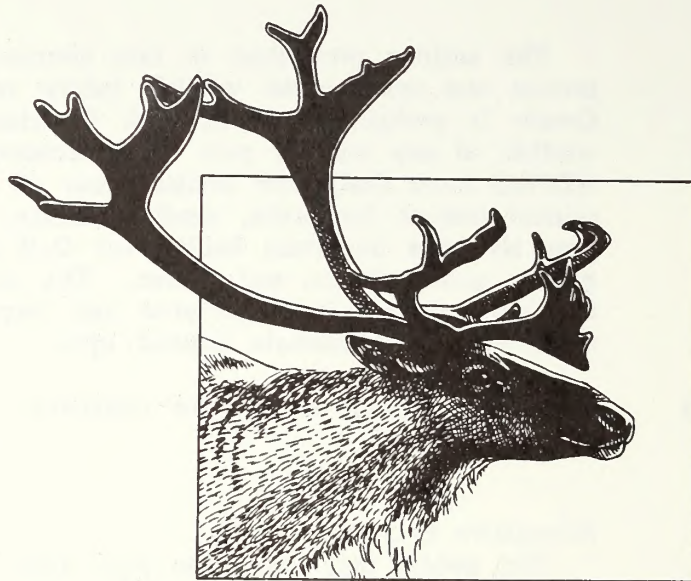
The public may enter the post after gaining permission from the Army at Fort Greely. They are expected to respect all rules concerning permanently and temporarily closed portions of the withdrawal. Access for mining activity also would be guided by special regulations contemplated in Alternative C Action 21.

Alternative C Action 2

The public may use unimproved remote landing areas after complying with notification requirements and provided that this use does not interfere with military activities or incur liability to the federal government. (Note: Allen Airfield is not located in the withdrawn area addressed by this plan. Use of Allen Airfield is governed by other regulations.) Similarly, the public may land on lakes in the withdrawal.

Alternative C Action 3

All development actions and military actions to the extent consistent with military needs in the caribou calving grounds would be conducted under winter conditions in which there is sufficient snow cover and the ground is adequately frozen so as to minimize damage to the vegetation and soils. The caribou calving grounds are defined in an appendix to the cooperative agreement between the Army, the Fish & Wildlife Service, and the Alaska Department of Fish and Game. (See Caribou Calving Area map in the discussion of the Preferred Alternative.) The Habitat Management Plan mandated by the cooperative agreement between the Army, the F&WS, and the ADF&G should give more specific descriptions of permissible and impermissible activities.



Alternative C Action 4

Minimize military training and prevent all mining in crucial sheep habitat identified in a Dall sheep study begun by the Army in fiscal year 1988. Crucial habitat may include mineral licks, lambing areas, and escape habitat.

Alternative C Action 5

Minimize military operations and exclude all disruptive civilian activities from sharptail grouse dancing grounds from April 20 to June 1. The HMP required by the cooperative agreement between the Army, F&WS, and ADF&G should define precise locations of these grounds.

Alternative C Action 6

The military would only conduct activities within one hundred yards of lakes stocked with fish when such training or testing is essential to the military's mission and alternatives sites are not feasible.

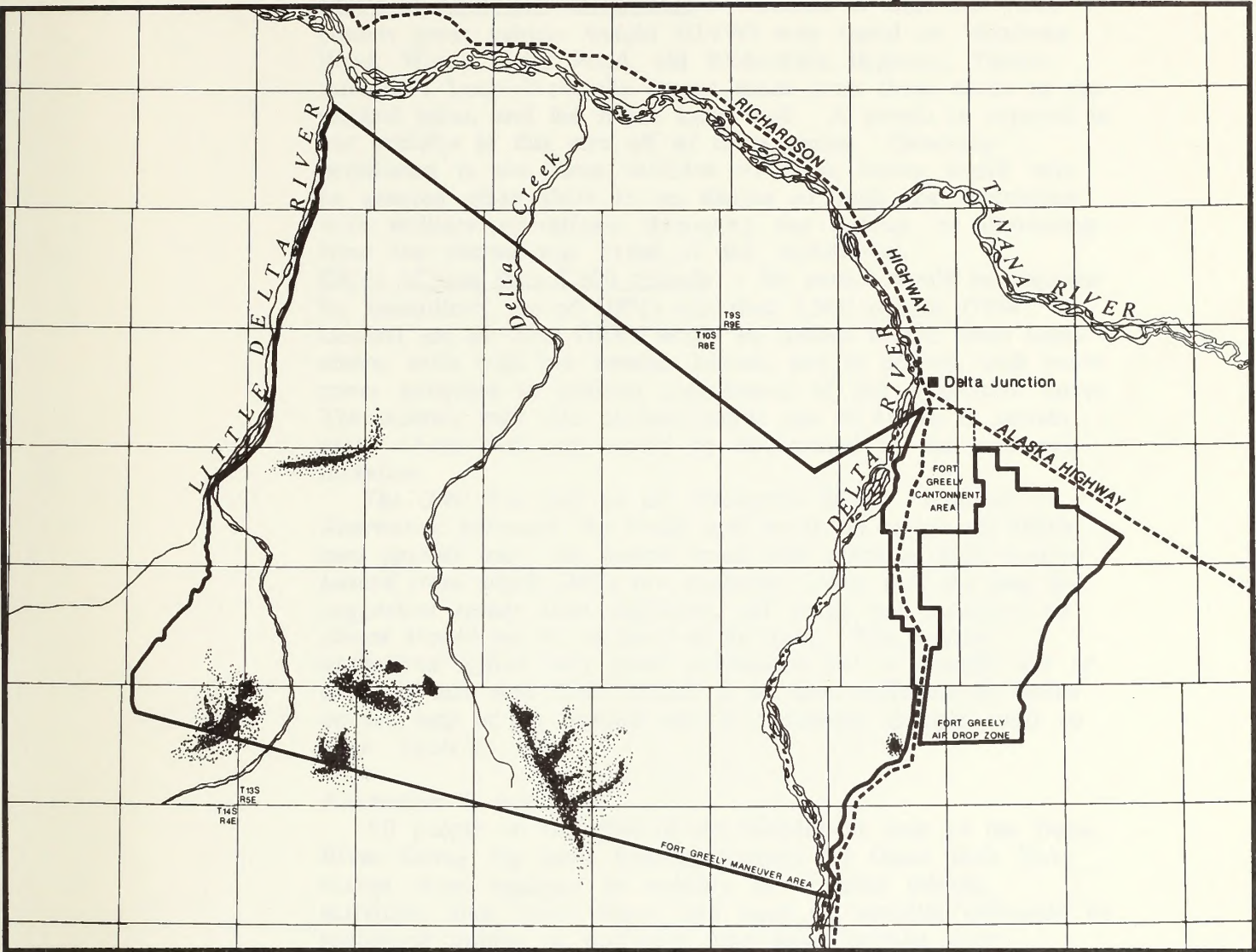
Alternative C Action 7

Nonmilitary use of off-road vehicles (ORVs) is permitted in some portions of the withdrawal and under certain conditions. The impact areas are closed to ORV use as indicated in the management common to all alternatives, and use of the remainder of the lands is limited as follows:


Fort Greely

DRAFT Resource Management Plan
DRAFT Environmental Impact Statement

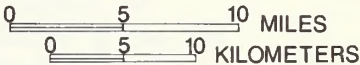
Grizzly Bear Habitat



Legend

 Unique or sensitive grizzly bear habitat

SCALE



LOCATION MAP



ORVs of 1,500 pounds or more -- Vehicles of more than 1,500 pounds gross vehicle weight (GVW) may travel on Meadows Road, Windy Ridge Road, old Richardson Highway, Thirty-three-mile Loop Trail, the access roads from these roads to the stocked lakes, and the Butch Lake trail. A permit is required to use vehicles of this size off of these routes. Generally permission to use these vehicles off these routes would only be granted when there is no danger of such use interfering with military operations, damaging the habitat, or detracting from the recreational value of the withdrawal.

ORVs of less than 1,500 pounds -- No permit would be required for nonmilitary use of ORVs less than 1,500 pounds GVW. General use of these ORVs would be limited to the roads listed above, soils with low erosion hazard, and to periods with snow cover adequate to prevent disturbance of the vegetative cover. The military may also exclude public use of ORVs in certain areas where their use would be detrimental to the military's mission.

The ORV Use map in the discussion of the Preferred Alternative indicates the roads and trails on which all ORVs may operate and the impact areas and areas of high erosion hazard from which ORVs are excluded. Note that the map is suggestive rather than definitive; all areas not indicated as closed should not be assumed to be open. The federal authorized officer may grant permission for a specific use of ORVs of less than 1,500 pounds in an area indicated as closed on the map or for general use of additional specific trails by such vehicles.

Alternative C Action 8

All people on that part of the withdrawal west of the Delta River during big game hunting seasons for Game Unit 20A, except those engaged in military or ongoing mining activities, must enter, leave, and have all supplies delivered by registered guides or outfitters who have permits from authorities designated by a Memorandum of Understanding drafted to implement this plan. This authority may limit the number of individuals with such permits for reasons of military need or habitat protection and may charge a fee for such permits. The designated permitting authority may develop regulations for the guides and outfitters to ensure appropriate and safe access to the withdrawal and proper use of resources on the land. Guides and outfitters would have to comply with provisions of 43 CFR 8372.

Alternative C Action 9

Forbid motorized vehicles from traveling overland in grizzly bear habitat. This habitat is shown on the accompanying Grizzly Bear Habitat map. It is largely that area west of Delta Creek and south of a ridge line along the northern tier of sections in T. 11 S., R. 5 E., F.M., commonly known as "Dinosaur Ridge."



Visual Resources Alternative C Action 10

Manage visual resources according to prescriptions for Visual Resource Management classes 3 and 4 as depicted on the accompanying Visual Resource Management map. The management objective in VRM 3 areas is to design proposed alterations so as to partially retain the existing character of the landscape. The management objective for VRM 4 areas is to provide for activities which require major modifications of the existing character of the landscape.

Fish and Wildlife Habitat

Alternative C Action 11

The Army would continue to monitor the calving activity of the Delta caribou herd. If the herd travels into the Oklahoma Impact area to calve, the Army and the Air Force would cease or modify training in and over the area until the animals leave.

Alternative C Action 12

Develop a Habitat Management Plan which emphasizes enhanced wildlife values within constraints necessary for the military to fulfill its mission. The HMP should establish target populations in consultation with the Alaska Department of Fish & Game.

Alternative C Action 13

Monitor water quality as funds are available and take action as appropriate.

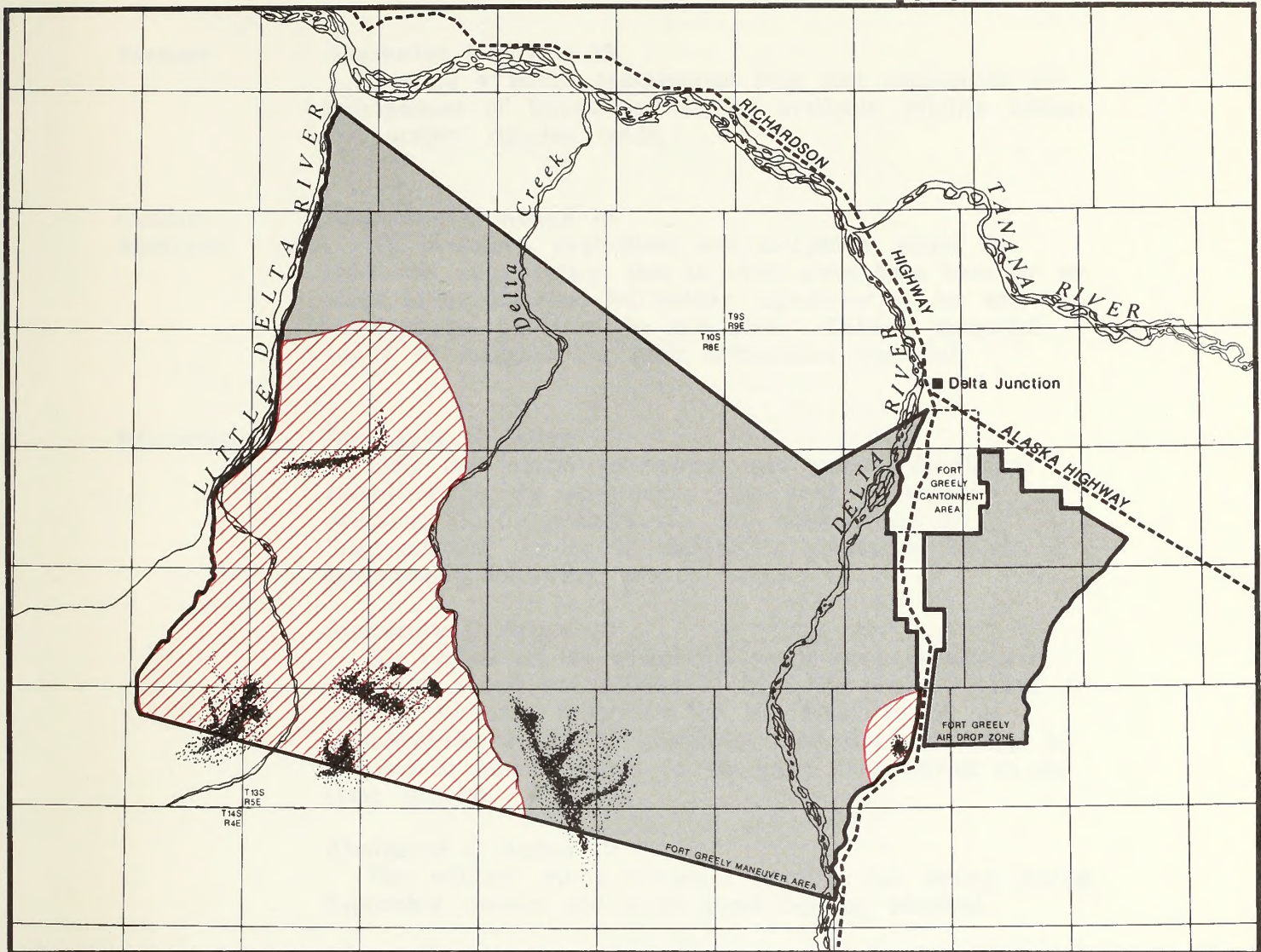
Alternative C Action 14

Maintain current bison food plots frequented by sharptail grouse and clear more fields for the benefit of these birds.

Fort Greely

DRAFT Resource Management Plan
DRAFT Environmental Impact Statement

Visual Resource
Management
Alternatives C, D,
and E



Legend

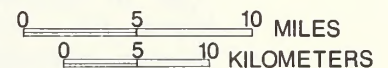


Visual Resource Management Class III
allows moderate modification of characteristic landscape that
does not attract attention nor dominate view.



Visual Resource Management Class IV
allows major modification of characteristic landscape that may
dominate the view and be a major focus of attention.

SCALE



LOCATION MAP



Forestry

Alternative C Action 15

Develop a Forest Management Plan that emphasizes the management of forests to increase available wildlife habitat and protect riparian lands.

**Cultural
Resources**

Alternative C Action 16

All inventory, evaluation, and mitigation would be conducted as necessary; that is when areas have been or are about to be disturbed for military operations or for any developments permitted by this plan. Cultural resources would be managed for their information potential.

Recreation

Alternative C Action 17

Only the federal government and private developers authorized by the government may erect or maintain structures on the withdrawal. All unauthorized or "encroachment" cabins are subject to possession by the government following proper notice.

Alternative C Action 18

All hunters on the withdrawal would have to obtain a permit to access the withdrawal from the proper civilian or military authority designated by the Memorandum of Understanding signed to implement this plan and would be required to submit reports on the game they harvest to the same official.

Alternative C Action 19

The military would minimize training and testing during September (moose and small game hunting seasons).

Rights-of-Way

Alternative C Action 20

Management would discourage the construction of any access route not essential for military activities. All access routes constructed to further economic development would be dismantled or blocked for future use after the economic purpose is served. Exceptions to this policy would be allowed when the route serves the military's mission in a significant way.

Minerals**Alternative C Action 21**

Open the withdrawal to mineral location and mineral leasing under regulations and procedures which would ensure that necessary military activities can be accomplished despite exploration and mining, and provide that no lands west of Delta Creek and south of a ridge line along the northern tier of sections in T. 11 S., R. 5 E., F.M. shall be open to any type of mining unless future habitat studies concurred in by both the BLM's State Director and the Commanding General of the 6th Infantry Division (Light) certify that portions of these lands can be opened without adverse effects on caribou, Dall sheep, and grizzly bears.

Alternative C Action 22

Allow the sale or other disposal of mineral materials (sand and gravel). BLM and the Army would review any application for such disposals to ensure minimal conflict with military activities and the bison summer range.

Fire Management Alternative C Action 23

The immediate environs of the Sullivan Roadhouse and specific Air Force equipment sites would be designated Critical fire suppression areas. The areas east of the Delta River (except for about four square miles of uplands east of Jarvis Creek), north of the impact areas, and north of a trail which extends west of Delta Creek from near the mouth of the "One-hundred-mile Creek" (which enters Delta Creek in Sec. 3, T. 10 S., R. 7 E., F.M.) would receive Modified fire suppression. The remainder of the withdrawal would receive Limited fire suppression. (See the Fire Management Categories map 1 in the discussion of the Preferred Alternative.)

Alternative C Action 24

Develop a fire management plan that would maximize the use of prescribed fire to preserve or enhance existing wildlife resource values, consistent with military needs. At a minimum, this plan should address use of prescribed fires for improving moose range and the bison calving ground.

Alternative D

The actions prescribed for this alternative are designed to enhance current recreational use of the Fort Greely Maneuver Area and Fort Greely Air Drop Zone and to offer new opportunities for the public to enjoy these tracts of land. Current common uses include hunting, fishing, trapping, and sight-seeing. Activities which are encouraged by actions in this alternative include camping, hiking, cross-country skiing and picnicking.

Management Actions

The following actions are consistent with achieving these goals.

Access

Alternative D Action 1

The public may enter the withdrawal at any time without expressed approval by the Army. (This does not remove the public's responsibility to check into Fort Greely should they enter across the cantonment.)

Alternative D Action 2

The public may use unimproved remote landing areas after complying with notification requirements and provided that this use does not interfere with military activities or incur liability to the federal government. (Note: Allen Airfield is not located in the withdrawn area addressed by this plan. Use of Allen Airfield is governed by other regulations.) Similarly, the public may land on lakes in the withdrawal.

Alternative D Action 3

Nonmilitary use of off-road vehicles (ORVs) is permitted in some portions of the withdrawal and under certain conditions. The impact areas are closed to ORV use as indicated in the management common to all alternatives, and use of the remainder of the lands is limited as follows:

ORVs of 1,500 pounds or more -- Vehicles of more than 1,500 pounds gross vehicle weight (GVW) may travel on Meadows Road, Windy Ridge Road, old Richardson Highway, Thirty-three-mile Loop Trail, the access roads from these roads to the stocked lakes, and the Butch Lake trail. A permit is required to use vehicles of this size off of these routes. Generally permission to use these vehicles off these routes would only be granted when there is no danger of such use interfering with military operations, damaging the habitat, or detracting from the recreational value of the withdrawal.

ORVs of less than 1,500 pounds -- No permit would be required for nonmilitary use of ORVs less than 1,500 pounds GVW. General use of these ORVs would be limited to the roads listed above, soils with low erosion hazard, and to periods with snow cover adequate to prevent disturbance of the vegetative cover. The military may also exclude public use of ORVs in certain areas where their use would be detrimental to the military's mission.

The ORV Use map in the discussion of the Preferred Alternative indicates the roads and trails on which all ORVs may operate and the impact areas and areas of high erosion hazard from which ORVs are excluded. Note that the map is suggestive rather than definitive; all areas not indicated as closed should not be assumed to be open. The federal authorized officer may grant permission for a specific use of ORVs of less than 1,500 pounds in an area indicated as closed on the map or for general use of additional specific trails by such vehicles.

Alternative D Action 4

Maintain signs at road and trail entrances to the withdrawal informing the public that they are entering a military withdrawal. The signs should warn of dangerous areas and closed areas.

Alternative D Action 5

Gates and appropriate signs would be erected to warn the public and prevent public access into the impact areas and other restricted areas. Gates to these areas would only be opened for military use.

Visual Resources Alternative D Action 6

Manage visual resources according to prescriptions for Visual Resource Management classes 3 and 4 as depicted on the Visual Resource Management map in the discussion of Alternative C. The management objective in VRM 3 areas is to design proposed alterations so as to partially retain the existing character of the landscape. The management objective for VRM 4 areas is to provide for activities which require major modifications of the existing character of the landscape.

Fish and Wildlife Habitat

Alternative D Action 7

The Army would continue to monitor the calving activity of the Delta caribou herd. If the herd travels into the Oklahoma Impact area to calve, the Army and the Air Force would cease or modify training in and over the area until the animals leave.

Alternative D Action 8

Develop and implement a Habitat Management Plan to improve habitat to increase viewing opportunities in the Meadows Loop Road area and increase opportunities for hunting success elsewhere. In consultation with the Alaska Department of Fish and Game, the HMP should establish target populations of game animals above the current level. The plan should not significantly impede the military's mission.

Alternative D Action 9

Establish a trapping management policy that would emphasize maximum participation consistent with sustained yield.

Forestry

Alternative D Action 10

Develop a Forest Management Plan which would maximize the opportunity for the harvest of fuel wood for personal use to the extent consistent with current law. Commercial use of this resource would be allowed, but would receive a lower priority in this alternative. In addition, maintain uncut buffer strips along recreational use roads and waterways. (It is understood that forests in the withdrawal fall under BLM's restricted category for management as outlined in BLM's Manual 1622.21A(1); that is, management of the withdrawal is primarily for the military, but timber harvests are permitted. The Forest Management Plan should address allowable harvest levels, reforestation methods, and appropriate silvicultural practices by measuring the impact of each on military needs, recreational opportunities, and economic considerations. The highest priority would be military need, followed by recreational opportunities, and then economic considerations.)



**Cultural
Resources****Alternative D Action 11**

Evaluate and mitigate, through excavation or interpretation, those localities where recreation activities are or would become prominent. These include Big, Butch, and "Koole" (Secs. 20-21, 28-29, T. 8 S., R. 6 E., F.M.) lakes. All other evaluation and mitigation would be conducted as necessary; that is when areas have been or are about to be disturbed for military operations or for recreational or other developments permitted by this plan.

Alternative D Action 12

Cultural resources other than those addressed in Alternative D Action 11 and the Sullivan Roadhouse and Ptarmigan Creek cabin are to be managed for conservation; that is, they are to remain in their present condition. Most cultural resources which are addressed through the process contemplated in Alternative D Action 11 would be managed for their information potential. However, some of these may be managed for their public value. Interpretive signs drawing upon such resources and the results of previous archeological investigations would be erected at some visitor locations identified in this plan and the Recreation Activity Management Plan noted in Alternative D Action 14. A Cultural Resource Activity Plan would develop a means of resolving the cultural resource management of Sullivan Roadhouse and the Ptarmigan Creek cabin in a way to enhance their public value consistent with military needs.

Recreation**Alternative D Action 13**

Only the federal government and private developers authorized by the government may erect or maintain structures on the withdrawal. All unauthorized or "encroachment" cabins are subject to possession by the government following proper notice.

Alternative D Action 14

Develop a Recreation Activity Management Plan (RAMP). This should include examination of potential joint use with the military of facilities such as shelters, trails, bivouac areas, and landing fields. No element of the plan may hinder current or anticipated military needs. At a minimum, the RAMP should consider, though not necessarily endorse:

- a. two ten- to twelve-space campgrounds, most likely to be located between the Richardson Highway and the Delta River.
- b. picnic sites at Big, Bolio, Mark, North Twin, and South Twin lakes. (Each of these is accessible from Meadows Lake Road.)
- c. interpretive and information signs along the Richardson Highway and the Meadows Loop Road. Some

of these would address the moose and bison populations of the fort.

- d. a cross-country ski trail accessible from a road commonly plowed through the winter.
- e. clearing trails around the stocked lakes and small areas along the lakeshore to enable fly fishing.
- f. clearing trails from the Meadows Loop Road or its branches to fish-stocked lakes not on the road network.
- g. a parking area and a hiking trail from the parking lot to the top of Donnelly Dome.

Alternative D Action 15

All Army training activities would cease during moose-hunting season.

Alternative D Action 16

All Air Force training activities would cease during moose-hunting season.

Alternative D Action 17

Limit military training to weekdays to the maximum extent possible.

Alternative D Action 18

Encourage continued use of the small arms military target ranges by nonmilitary users for target practice, shooting matches, and sighting-in of hunting arms when such use would not pose a safety problem or conflict with military use.

Alternative D Action 19

Post road signs and mileage markers on roads and trails in the withdrawal.

Alternative D Action 20

The Army and BLM would develop and implement a public information program, including newspaper and other media, informing the public of recreational opportunities on the fort and the public's responsibilities when using the withdrawals.

Alternative D Action 21

Develop an agreement between BLM and the 6th Infantry Division (Light) for management and maintenance of outdoor recreation facilities and improvements contemplated in this plan.

Rights-of-Way

Alternative D Action 22

Rights-of-way may be granted if they do not conflict with the military's mission. They should be subject to terms and conditions to assure that military needs are met. Permit all roads and trails constructed in the interest of timber or

mineral development to be open for recreational use, to the maximum extent consistent with the military mission.

Minerals

Alternative D Action 23

Open the withdrawn lands west of the Delta River to mineral location under regulations and procedures which would ensure that necessary military activities can be accomplished despite exploration and mining. The land east of the river would remain closed to mineral location.

Alternative D Action 24

Open the land west of the Delta River to mineral leasing under regulations and procedures which would ensure that necessary military activities can be accomplished and recreational opportunities would not be adversely affected. The land east of the river would remain closed to mineral leasing.

Alternative D Action 25

Allow the sale or other disposal of mineral materials (sand and gravel). BLM would process applications for such disposals with the concurrence of the Army to ensure minimal conflict with military activities and recreational values.

Fire Management Alternative D Action 26

The immediate environs of the Sullivan Roadhouse and specific Air Force equipment sites would be designated Critical fire suppression areas. The areas east of the Delta River (except for about four square miles of uplands east of Jarvis Creek), north of the impact areas, and north of a trail which extends west of Delta Creek from near the mouth of the "One-hundred-mile Creek" (which enters Delta Creek in Sec. 3, T. 10 S., R. 7 E., F.M.) would receive Modified fire suppression. The remainder of the withdrawal would receive Limited fire suppression. (See Fire Management Categories map 1 in the discussion of the Preferred Alternative.)

Alternative E

The actions prescribed in this alternative are designed to increase economic development activities on the Fort Greely withdrawal. The Military Lands Withdrawal Act of 1986 specifically mentions the need to examine management of the lands to enhance such use and mining, timber, and trapping interests commented during the issue identification phase of this planning action on the potential for this area to serve such purposes.

Management Actions

The following actions are consistent with achieving this goal.

Access

Alternative E Action 1

The public may enter the post after gaining permission from the Army at Fort Greely. They are expected to respect all rules concerning permanently and temporarily closed portions of the withdrawal. Access for mining activity also would be guided by special regulations contemplated in Alternative E Action 17.

Alternative E Action 2

The public may use unimproved remote landing areas after complying with notification requirements and provided that this use does not interfere with military activities or incur liability to the federal government. (Note: Allen Airfield is not located in the withdrawn area addressed by this plan. Use of Allen Airfield is governed by other regulations.) Similarly, the public may land on lakes in the withdrawal.

Alternative E Action 3

Nonmilitary use of off-road vehicles (ORVs) is permitted in some portions of the withdrawal and under certain conditions. The impact areas are closed to ORV use as indicated in the management common to all alternatives, and use of the remainder of the lands is limited as follows:

ORVs of 1,500 pounds or more -- Vehicles of more than 1,500 pounds gross vehicle weight (GVW) may travel on Meadows Road, Windy Ridge Road, old Richardson Highway, Thirty-three-mile Loop Trail, the access roads from these roads to the stocked lakes, and the Butch Lake trail. A permit is required to use vehicles of this size off of these routes. Generally permission to use these vehicles off these routes would only be granted when there is no danger of such use interfering with military operations, damaging the habitat, or detracting from the recreational value of the withdrawal.

ORVs of less than 1,500 pounds -- No permit would be required for nonmilitary use of ORVs less than 1,500 pounds GVW. General use of these ORVs would be limited to the roads listed above, soils with low erosion hazard, and to periods with snow cover adequate to prevent disturbance of the vegetative cover. The military may also exclude public use of ORVs in certain areas where their use would be detrimental to the military's mission.

The ORV Use map in the discussion of the Preferred Alternative indicates the roads and trails on which all ORVs may operate and the impact areas and areas of high erosion hazard from which ORVs are excluded. Note that the map is suggestive rather than definitive; all areas not indicated as closed should not be assumed to be open. The federal authorized officer may grant permission for a specific use of ORVs of less than 1,500 pounds in an area indicated as closed on the map or for general use of additional specific trails by such vehicles.

Alternative E Action 4

All people on that part of the withdrawal west of the Delta River during big game hunting seasons for Game Unit 20A, except those engaged in military or ongoing mining activities, must enter, leave, and have all supplies delivered by registered guides or outfitters who have permits from authorities designated by a Memorandum of Understanding drafted to implement this plan. This authority may limit the number of individuals with such permits for reasons of military need or habitat protection and may charge a fee for such permits. The designated permitting authority may develop regulations for the guides and outfitters to ensure appropriate and safe access to the withdrawal and proper use of resources on the land. Guides and outfitters would have to comply with provisions of 43 CFR 8372.

Alternative E Action 5

Restrict nondevelopment public use of roads associated with economic development during periods of intense development activity.

Alternative E Action 6

Exclude military activities from operation control facilities for economic development. These sites would encompass the minimum necessary area to store equipment and materials and to house the operators.

Visual Resources Alternative E Action 7

Manage visual resources according to prescriptions for Visual Resource Management classes 3 and 4 as depicted on the Visual Resource Management map in the discussion of Alternative C. The management objective in VRM 3 areas is to design proposed alterations so as to partially retain the existing character of the landscape. The management objective for VRM 4 areas is to provide for activities which require major modifications of the existing character of the landscape.

**Fish and
Wildlife Habitat**

Alternative E Action 8

The Army would continue to monitor the calving activity of the Delta caribou herd. If the herd travels into the Oklahoma Impact area to calve, the Army and the Air Force would cease or modify training in and over the area until the animals leave.

Alternative E Action 9

Develop a Habitat Management Plan which would accommodate and minimize conflicts with economic development and military activities and be consistent with the trapping management plan note in Alternative E Action 10. The HMP should establish target populations consistent with these goals in consultation with the Alaska Department of Fish & Game. The plan should not significantly impede the military's mission.

Alternative E Action 10

Establish a permitting system for trapping through a trapping management plan. This system may include a bidding system to allot trapping rights on the withdrawal, and it would be designed to promote a sustained harvest of furbearers and commercial, rather than recreational, trapping. The plan should be developed in cooperation with the Alaska Department of Fish and Game.

Forestry

Alternative E Action 11

Develop a Forest Management Plan which maximizes the commercial sale of saw timber, house logs, and firewood, consistent with the requirements of military use. Commercial sales are considered most feasible for timber stands near the Delta River.

**Cultural
Resources**

Alternative E Action 12

Place emphasis for cultural resource inventory and mitigation work on those lands west of Delta Creek and in areas of prime interest for timber sales. Mitigate through excavation any significant sites that may be affected by

development activities. Mitigate the Ptarmigan Creek cabin through Historic American Buildings Survey documentation and archeological testing, and determine proper management of the Sullivan Roadhouse. All other evaluation and mitigation would be conducted as necessary; that is when areas have been or are about to be disturbed for military operations or for recreational or other developments permitted by this plan. With the possible exception of the Sullivan Roadhouse, cultural resources should be managed for their information potential.

Recreation**Alternative E Action 13**

Only the federal government and private developers authorized by the government may erect or maintain structures on the withdrawal. All unauthorized or "encroachment" cabins are subject to possession by the government following proper notice.

Alternative E Action 14

The military attempts to minimize training and testing during September (moose and small game hunting seasons).

Rights-of-Way**Alternative E Action 15**

To the maximum extent consistent with achieving military objectives, grant rights-of-ways to facilitate economic development on and off the withdrawal. However, such rights-of-way are not to include access roads and other ancillary mining facilities as defined in 43 CFR 3809. They must be incorporated in a mining plan of operation.

Alternative E Action 16

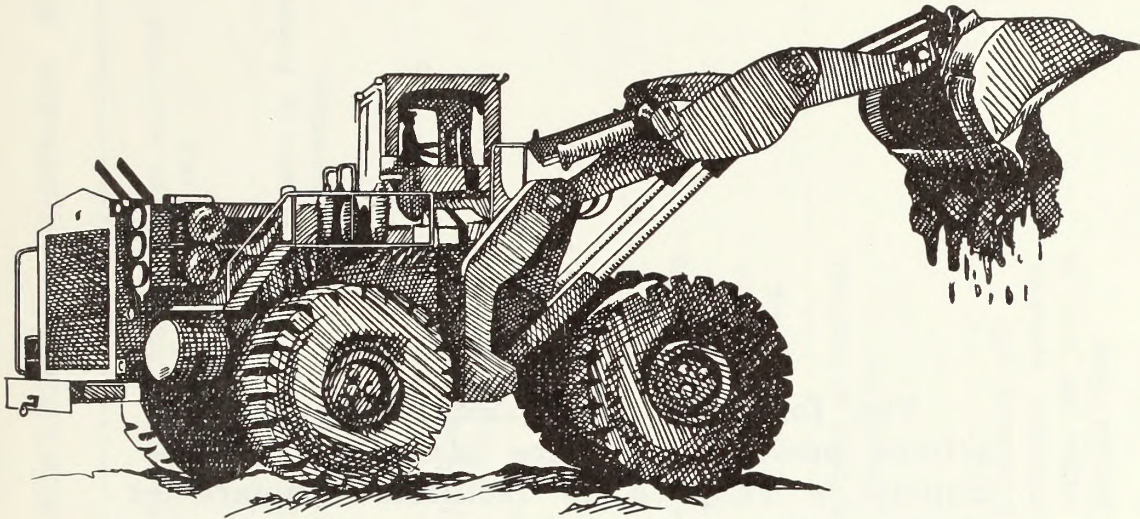
Encourage permanent road development on those portions of the withdrawal where such construction can increase economic development. These routes would be left open to all uses, so far as this is consistent with military training needs and public safety.

Minerals**Alternative E Action 17**

Open the lands to mineral location under regulations and procedures which would ensure that necessary military activities can be accomplished despite exploration and mining.

Alternative E Action 18

Open the land to mineral leasing under regulations and procedures which would ensure that necessary military activities can be accomplished.



Alternative E Action 19

Conduct a mineral assessment on Molybdenum Ridge and other areas on the withdrawal as deemed appropriate.

Alternative E Action 20

Allow the sale or other disposal of mineral materials (sand and gravel). BLM would process applications for such disposals with the concurrence of the Army to ensure minimal conflict with military activities.

Fire Management Alternative E Action 21

The immediate environs of the Sullivan Roadhouse and specific Air Force equipment sites would be designated Critical fire suppression areas. The areas east of the Delta River (except for about four square miles of uplands east of Jarvis Creek), north of the impact areas, and north of a trail which extends west of Delta Creek from near the mouth of the "One-hundred-mile Creek" (which enters Delta Creek in Sec. 3, T. 10 S., R. 7 E., F.M.) would receive Modified fire suppression. The remainder of the withdrawal would receive Limited fire suppression. (See Fire Management Categories map 1 in the discussion of the Preferred Alternative.)

The following table summarizes the actions prescribed by the alternatives. The display is designed to facilitate comparisons of the actions concerning various facets of resource management among the alternatives. A blank space in the matrix indicates that, other than the management designated in the management common to all alternatives, the corresponding alternative does not mandate protection, development, or other initiative similar to that described in other alternatives.

Summary of Alternatives

Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Access	1. public may enter with permission from Army	1. same as Preferred Alternative	1. same as Preferred Alternative	1. no restrictions on access	1. same as Preferred Alternative
	2. remote landing areas available after notifying Army	2. same as Preferred Alternative	2. same as Preferred Alternative	2. same as Preferred Alternative	2. same as Preferred Alternative
	3. minimize adverse impact of military and development activities on caribou calving areas		3. same as Preferred Alternative		
	4. minimize military training in crucial sheep habitat		4. minimize military training and prevent mining in crucial sheep habitat		
	5. minimize disruption of sharptail grouse dancing grounds		5. same as Preferred Alternative		
	6. military will take special care around water bodies to protect habitat		6. military will minimize activities within 100 yards of stocked lakes		

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of Alternatives

	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Access (cont.)						
7. no ORVs in impact areas or environmentally sensitive areas; no permit needed to use ORVs less than 1,500 lbs.; permit needed to use larger ORVs off roads	3. ORVs can operate off road; other wheeled vehicles must stay on roads			7. same as Preferred Alternative	3. same as Preferred Alternative	3. same as Preferred Alternative
8. warning signs at entrances to withdrawal		2. gates at all entrances			4. same as Preferred Alternative	
9. signs to warn of impact areas					5. signs and gates at roads to impact and restricted areas	
				8. entrance only with guide west of Delta R. in big game season		4. same as Alternative C
				9. no motor vehicles in grizzly bear habitat		
						5. restrict public use of economic development roads
						6. no military activities at economic development control facilities

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of Alternatives

Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Vegetation					
10. improve and protect vegetation resources in the course of conducting other actions					
Visual Resources					
11. all VRM 4	3. same as Preferred Alternative	10. southwest portion and Donnelly Dome VRM 3; rest VRM 4	6. same as Alternative C	7. same as Alternative C	
Fish and Wildlife					
12. adjust military activities for caribou calving	4. same as Preferred Alternative	11. same as Preferred Alternative	7. same as Preferred Alternative	8. same as Preferred Alternative	
13. HMP include H ₂ O program, bison plots, bison viewing; regulate transportation modes	5. Army maintains bison food plots	12. HMP to enhance wildlife	8. HMP to improve viewing and hunting	9. HMP to accommodate economic development and trapping	
	4. HMP to conserve wildlife without interfering with military	13. monitor water quality; take action when required			
		14. maintain bison food plots and clear fields for sharptail grouse			
			9. emphasize maximum participation in trapping	10. establish trapping system to promote commercial trapping and sustained yield	

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of Alternatives

Preferred Alternative		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Forestry	14. FMP to study opportunities for timber harvest	6. public with permit can take firewood	5. harvest only to aid military activities	15. FMP to enhance wildlife	10. FMP to emphasize personal use firewood harvesting	11. FMP to emphasize commercial harvesting
	15. mitigate Ptarmigan Cr. cabin and resolve Sullivan Rdhs.; all other inventory, evaluate, and mitigate as necessary	7. inventory, evaluate, and mitigate as necessary	6. mitigate Ptarmigan Cr. cabin; resolve Sullivan Rdhs.; inventory, evaluate, and mitigate all areas	16. same as Alternative A	11. inventory, evaluate, and mitigate recreation sites and as necessary 12. interpretive signs; resolve Sullivan Rdhs. and Ptarmigan Cr. cabin in Cultural Resources Activity Plan	12. emphasize inventory, evaluation, and mitigation west of Delta Cr. and in prime timber land; mitigate Ptarmigan Cr. cabin and resolve Sullivan Rdhs.; all other inventory, evaluate, and mitigate as necessary
Cultural Resources	16. no unauthorized cabins	8. same as Preferred Alternative	17. same as Preferred Alternative	13. same as Preferred Alternative	13. same as Preferred Alternative	
Recreation						

Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Recreation (cont.)					
17. recreationists must follow military rules; these now require those who hunt, fish, or trap to sign a liability release form and attend a briefing; hunters and trappers must submit harvest reports	9. hunt, fish, and trap according to Reg. 420-6		18. hunters need permit and must submit harvest reports		
18. guides etc. may operate with permit					
19. RAMP to provide recreation opportunities				14. RAMP to consider joint use of military facilities, campgrounds, picnic sites and trails	
	10. military minimizes its use during September		19. same as Alternative A	15. Army training stops during moose season	14. same as Alternative A
				16. Air Force training stops during moose season	
				17. limit training to weekdays when possible	

Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

Summary of Alternatives

	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Recreation (cont.)		11. continue public use of small arms target ranges			18. same as Alternative A	
					19. post road and mileage signs	
					20. public information program	
					21. Army-BLM agreement on mgmt. of recreation sites	
Rights-of- Way	20. rights-of-way granted if no conflict with military	12. same as Preferred Alternative	20. minimize new access routes	22. rights-of-way granted if no conflict with military; logging or mining roads open to recreationists	15. grant rights-of- way for developments other than mining	16. encourage per- manent roads to aid economic developments
Minerals	21. mineral assessment prior to consideration of opening under Sec. 12(a) of PL 99-606; also consider Dall sheep habitat	13. closed to mining, except mineral materials	7. closed to mining, except mineral materials for roads	21. open to mineral location and leasing with regulations and after check for crucial habitat in the southwest area	23 & 24. open to mineral location and leasing with regulations west of Delta R.	17 & 18. open to mineral location and leasing with regulations 19. conduct mineral assessment of Molybdenum Ridge and other appropriate areas

Summary of Alternatives

Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Minerals (cont.)					
22. consider military activities in allowing mineral material sale and road work sites	14. same as Preferred Alternative	8. consider military activities in allowing mineral material sites for road work	22. consider military activities and bison in allowing mineral material sale and road work sites	25. consider military and recreation activities in allowing mineral material sale and road work sites	20. same as Preferred Alternative

Fire Management	23. Critical for Sullivan Rdhs and Air Force equipment sites; Modified east of Delta R. and north of impact areas and trail extension to west end of fort; Limited for rest. Change through Interagency Fire Management Plan	15. Critical for Air Force equipment sites; Full for Sullivan Rdhs; Modified east of Delta R. and north of impact areas and trail extension to west end of fort; Limited for rest	9. Critical for Air Force equipment sites; Limited for impact and west of East Fork Little Delta; Modified between East Fork and Delta Cr. and 100 Mi. Cr.; Full for rest	23. Critical for Sullivan Rdhs and Air Force equipment sites; Modified east of Delta R. and north of impact areas and trail extension to west end of fort; Limited for rest.	24. fire mgmt. plan to maximize prescribed fire for wildlife habitat	26. same as Alternative C	20. same as Alternative C
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Note: Additional management direction for each alternative is contained in Management Common to All Alternatives.

The following table provides estimations of the level of activity for timber and fuel wood harvesting, recreational use, and mining under the various alternatives. Discussion of the development potential of the Fort Greely withdrawal can be found at the beginning of Chapter 3.

Activity Projections 1990-2001 for Each Planning Alternative

	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Timber						
Acres harvested	0 - 100/yr.	0 - 100	0 - 300	0 - 100/yr.	0 - 100/yr.	0 - 100/yr.
Recreation						
Visitor days	9,000	8,000	0	8,000	13,000	8,000
Locatable Minerals						
Placer mining operations	0 - 1	0	0	0 - 1	0 - 1	0 - 1
Acres impacted*	0 - 4/yr.	0	0	0 - 4/yr.	0 - 4/yr.	0 - 4/yr.
Mineral Material Sites						
Gas line sites**	5	5	0	5	5	5
DOT/PF sites	2	2	2	2	2	2
Acres impacted	35 - 70	35 - 70	10 - 20	35 - 70	35 - 70	35 - 70

*Does not include acreage for roads and structures.

**Assumes TAGS is built.

The following table summarizes the anticipated impacts of the alternatives. Chapter 3 elaborates on the information presented in this table.

Summary of Environmental and Military Consequences

	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Air, Soil, Water, and Vegetation	Greater protection from ORVs than current mgmt.; potential for better monitoring of water; potential increases in erosion, sedimentation and traffic induced dust along roadways from timber harvests, mining, and increased recreational use	Small impacts from ORVs; no effects from timber harvests	Restriction on public access minimizes nonmilitary impacts; less effects from sand and gravel extraction than other alternatives because no sales are allowed; more aggressive fire suppression decreases acres burned and the amount of smoke discharged into atmosphere	Restrictions on development and military provides habitat protection; enhancement of moose, bison, and grouse habitat suppresses natural vegetation succession in favor of herbaceous and shrub vegetation; ORV, timber, and mining impacts same as in Preferred Alternative	Recreational improvements may require ground clearing; visitor use will increase traffic dust and trash more than any other alternative; ORV impacts similar to Preferred Alternative but possibly more impact because of greater visitor days; timber and mining impacts same as in Preferred Alternative	More impacts due to ground clearing and road construction for development; additional roads will subject more areas to traffic dust and open more land to ORV impacts

Summary of Environmental and Military Consequences

	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Fish and Wildlife	Habitat protection measures should prevent diminution in healthy animal populations despite development; HMP and FMP mandated actions will tend to increase habitat for small mammals, birds, moose, and bison; hunting by miners could cause small increase in game harvest, especially bears	Current healthy animal populations would be maintained, despite growth in military population; fewer nonmilitary impacts on wildlife than all but Alternative B because there is no mining, timber sales, or recreational improvements	Exclusion of hunters and trappers will cause a temporary increase in game and furbearers not at carrying capacity; ultimately natural forces will eliminate excess and maintain natural equilibrium	These impacts will be essentially the same as for the Preferred Alternative	There will be increased pressure on wildlife from developments and greater human visitation, particu- larly to area along Meadows Road; little increase in hunting pressure, since hunters generally are free to hunt now, but hunting by miners could cause small increase in game harvest, especially bears	Emphasis on commercial timber harvests may increase clear cutting over that in Preferred Alterna- tive, thus slightly increasing open habitat; without protective countermeasures there may be minor impacts due to mineral development

Summary of Environmental and Military Consequences

	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Cultural Resources	Timber harvests, mining, recreational developments and military activities could impact sites; modest increase in visitor days could slightly increase intentional and unintentional disturbance of cultural sites; Ptarmigan Creek information will be preserved	Military activities and sand and gravel extraction can disturb sites	Military activities and road use sand and gravel sites can disturb sites; there will be less poten- tial for intentional and unintentional disturbance of cul- tural sites by civil- ians; far more cul- tural sites will be inventoried and evaluated under this alternative com- pared to all other alternatives	Timber harvests, mining, and military activities could impact sites; dis- couraging roads and requiring entrance at certain times with guides or outfitters would tend to limit potential for intentional and unintentional disturbance of cultural sites	Timber harvests, mining, recreational developments, and military activities could impact sites; increase in visitor days could increase intentional and unintentional disturbance of cultural sites, though clearance of recreational sites will minimize this impact	Timber harvests, mining, and military activities could impact sites; en- couraging roads will tend to increase potential for intentional and unintentional disturbance of cultural sites while requiring entrance at certain times with guides or outfitters will help to restrict such disturbance; Ptarmigan Creek information will be preserved

Summary of Environmental and Military Consequences

	Preferred Alternative	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Socio- economics	Preserves current economic benefits of recreation; may add new source of timber, particularly for summer harvest, without notably increasing economic benefits to that sector; provides for most convenient sand and gravel supplies and may result in locatable mining opening	Preserves current economic benefits of recreation, personal dead and down firewood gathering, and sales of sand and gravel	Economic benefits of recreation will shift to other areas of Alaska and some recreation may not take place; eliminates benefit of personal firewood gathering and would force private developers to haul sand and gravel greater distances	Economic impacts of timber and mineral development would be similar to Preferred Alternative; economic stimulus of recreation would be funneled more through guides and outfitters	Impacts will be similar to Preferred Alternative, except that increased recreational use will benefit those who service recreationist, particularly nonconsumptive users	Impacts will be similar to those of Alternative C

Summary of Environmental and Military Consequences

Preferred		Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Alternative						
Military	Protecting caribou herds during calving requires that the Army and Air Force cease training on at least part of impact area 2 or 3 days each year; timber and mining operations, unless properly restricted, could interfere with training	Protecting caribou herds during calving will have the same impact as in Preferred Alternative; minimizing training during September places some restraint on military operations	Restricting civilian access will minimize interference with training; thorough cultural resource clearance will facilitate future military development; locked gates at all road entrances will be a significant inconvenience to troops	Protecting caribou herds during calving will have the same impact as in Preferred Alternative; minimizing training during September places some restraint on military operations; timber and mining operations, unless properly restricted, could interfere with training	Allowing the public access without notifying the Army will create a significant safety problem and impede training; ceasing training during moose hunting season will significantly limit Army and Air Force training flexibility; signs would undermine troop orienting training; mining operations, unless properly restricted, could interfere with training	If many economic control facilities are instituted they will significantly restrict military training; timber and mining operations, unless properly restricted, could interfere with training

Name		Address		Occupation		Religion		Political Party		Social Status		Other	
John Smith		123 Main St		Farmer		Methodist		Republican		Middle Class		Wife: Mary	
Jane Doe		456 Oak St		Teacher		Baptist		Democrat		Lower Middle Class		Wife: John	
Robert Brown		789 Pine St		Merchant		Presbyterian		Republican		Upper Middle Class		Wife: Sarah	
Elizabeth White		101 Elm St		Homemaker		Catholic		Democrat		Lower Class		Wife: James	
Thomas Green		202 Cedar St		Blacksmith		Anglican		Republican		Middle Class		Wife: Mary	
Mary Black		303 Birch St		Dressmaker		Methodist		Democrat		Lower Middle Class		Wife: John	
James Gray		404 Spruce St		Carpenter		Baptist		Republican		Middle Class		Wife: Elizabeth	
Sarah Hall		505 Willow St		School Teacher		Presbyterian		Democrat		Lower Middle Class		Wife: Thomas	
William King		606 Ash St		Physician		Catholic		Republican		Upper Middle Class		Wife: Mary	
Anna Lee		707 Hickory St		Homemaker		Anglican		Democrat		Lower Class		Wife: James	
George Miller		808 Sycamore St		Blacksmith		Methodist		Republican		Middle Class		Wife: Sarah	
Elizabeth Taylor		909 Magnolia St		Dressmaker		Baptist		Democrat		Lower Middle Class		Wife: John	
John Wilson		1010 Poplar St		Carpenter		Presbyterian		Republican		Middle Class		Wife: Elizabeth	
Mary Adams		1111 Chestnut St		Homemaker		Catholic		Democrat		Lower Class		Wife: James	
Thomas Evans		1212 Walnut St		Blacksmith		Anglican		Republican		Middle Class		Wife: Mary	
Sarah Baker		1313 Elm St		Dressmaker		Methodist		Democrat		Lower Middle Class		Wife: John	
James Clark		1414 Oak St		Carpenter		Baptist		Republican		Middle Class		Wife: Elizabeth	
Elizabeth Lewis		1515 Pine St		Homemaker		Presbyterian		Democrat		Lower Class		Wife: Thomas	
William Harris		1616 Cedar St		Physician		Catholic		Republican		Upper Middle Class		Wife: Mary	
Anna Scott		1717 Birch St		Homemaker		Anglican		Democrat		Lower Class		Wife: James	
George Young		1818 Spruce St		Blacksmith		Methodist		Republican		Middle Class		Wife: Sarah	
Elizabeth King		1919 Willow St		Dressmaker		Baptist		Democrat		Lower Middle Class		Wife: John	
John Wright		2020 Ash St		Carpenter		Presbyterian		Republican		Middle Class		Wife: Elizabeth	
Mary Green		2121 Hickory St		Homemaker		Catholic		Democrat		Lower Class		Wife: James	
Thomas Allen		2222 Sycamore St		Blacksmith		Anglican		Republican		Middle Class		Wife: Mary	
Sarah Young		2323 Magnolia St		Dressmaker		Methodist		Democrat		Lower Middle Class		Wife: John	
James Hill		2424 Poplar St		Carpenter		Baptist		Republican		Middle Class		Wife: Elizabeth	
Elizabeth King		2525 Chestnut St		Homemaker		Presbyterian		Democrat		Lower Class		Wife: Thomas	
William Hill		2626 Walnut St		Physician		Catholic		Republican		Upper Middle Class		Wife: Mary	
Anna Hill		2727 Elm St		Homemaker		Anglican		Democrat		Lower Class		Wife: James	
George Hill		2828 Oak St		Blacksmith		Methodist		Republican		Middle Class		Wife: Sarah	
Elizabeth Hill		2929 Pine St		Dressmaker		Baptist		Democrat		Lower Middle Class		Wife: John	
John Hill		3030 Cedar St		Carpenter		Presbyterian		Republican		Middle Class		Wife: Elizabeth	
Mary Hill		3131 Birch St		Homemaker		Catholic		Democrat		Lower Class		Wife: James	
Thomas Hill		3232 Spruce St		Blacksmith		Anglican		Republican		Middle Class		Wife: Mary	
Sarah Hill		3333 Willow St											

CHAPTER 2 AFFECTED ENVIRONMENT



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Chapter 2

Affected Environment

Introduction

This chapter briefly describes the social and environmental setting of the planning area. The information in this chapter served as a basis in developing the alternatives discussed in Chapter 1 and in predicting environmental impacts of the alternatives as related in Chapter 3.

Socioeconomic Conditions



Demographic Characteristics

Over the past decade and a half the population of Delta Junction has risen, while that of neighboring Fort Greely has dropped. Delta Junction grew from 703 residents in 1970 to 1,228 fifteen years later. In contrast, Fort Greely, which housed 1,820 people in 1970, had approximately 1,580 in June 1987. (U.S. Bureau of the Census, 1981; Delta Junction, 1985; U.S. Army, 6th ID(L), 1987a) Absent stimulation of the nonmilitary sectors of the local economy, the area's population may decline in the next few years because the Army is reducing personnel assigned to the fort. (U.S. Army, 6th ID(L), 1987b)

The Fort Greely area population is distinctive in several ways. It is more mobile than most Alaskan communities. Nearly half of the town's residents in 1980 did not live in the state five years earlier, and that figure is almost certainly larger on the fort where troops are assigned to a normal service rotation of two years. Residents of the fort were younger and more predominantly male than the state norm--the median age on the fort was less than 22 in 1980 compared to 26 statewide, and 60 percent of its residents were male compared to a state ratio of 53 men to 47 women. Also, substantially less than 10 percent of the area's population was Native, contrasting with 16 percent of Alaska's entire population in 1980. (U.S. Bureau of the Census, 1982a, pp. 7, 48; U.S. Bureau of the Census, 1982b)

**Economy and
Employment**

Government employment, primarily that at Fort Greely, has supported the bulk of the Delta Junction area population for several decades. In 1986 71 percent of all employed residents of Delta Junction and Fort Greely received a federal paycheck. This included over 700 soldiers and about 350 civilian federal employees. The State and local governments employed another 11 percent of local civilian workers. (Alaska, Department of Labor, 1986)

Most other businesses and employment opportunities in Delta Junction depend heavily on the very seasonal traffic on the Alaska and Richardson highways. Increases in the number of tourists passing through the town stirred a small expansion in restaurant, gift shop, and service station businesses in the 1980s. These firms account for approximately 10 percent of local economic activity. (Mandeville, 1987)

Some other jobs are tied to the agricultural projects located near the town. Although farmers, like other area residents, look to Fairbanks and beyond for equipment and some of their repairs, supplies, and markets, they also support a local Alaska Farmers' Cooperative store, purchase fuel from Delta Junction vendors, and have some repairs handled at a town shop. (Franklin, 1987) About twenty-five residents engage in mining and eight area sawmills employ forty people seasonally or year-round. (Geiger, 1987; Alaska, Division of Forestry, Delta Junction, 1987) Due in part to the seasonality of much of the work in the region, unemployment is traditionally high--it was about 12 percent in 1983 and 1984. (U.S. Bureau of the Census, 1982b)

**Community
Facilities and
Services**

There was a glut of housing in Delta Junction in 1987. There were seventy-three homes for sale within a fifteen-mile radius of the city and a 60 percent vacancy rate for apartments in town. This was largely due to the movement of military personnel from the community onto the military base. (Geiger, 1987)

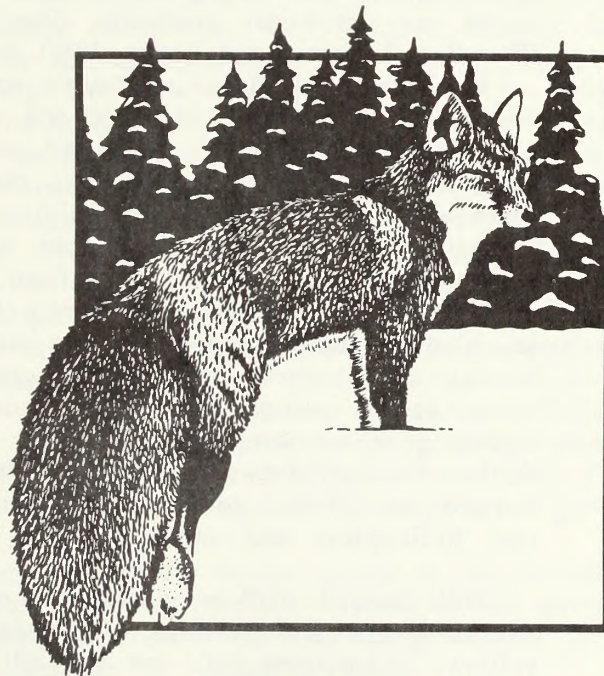
The town receives its electricity from the Golden Valley Electric Association and its telephone service from Telephone Utilities of the Northland. There are no central water or sewage systems for the town. Residents rely upon wells and septic tanks. Fort Greely has its own sewage and water plants. There is a volunteer rescue squad, and three Alaska State Troopers provide police protection. A doctor, a physician's assistant, and a dentist provide medical care. The state and the military cooperatively fund education in the area. A school on Fort Greely teaches K-8 students, while schools in town teach K-12. (Mandeville, 1987)

Subsistence

Salcha Natives in historic times ascended Delta River and Delta Creek for subsistence hunts. However, by the 1920s they ceased to travel so far to hunt. By 1945 the Natives had virtually abandoned Salcha and in 1962 there were no Native

settlements in the Tanana Valley between Healy Lake and Nenana. (Andrews, 1975, pp. 31-32; McKennan, 1981, p. 566) These villages are distant from Fort Greely, and consequently the fort area has been little used by Natives for subsistence for many years.

With the possible exception of several trappers active on the west side of the Delta River, there is no evidence of subsistence activity on the withdrawal. The few trappers gain only a portion, probably a minority, of their annual earnings from trapping. Although hundreds of people hunt on the fort, they are not likely to be subsistence hunters. Many fly in and most are probably recreational hunters from Fairbanks and Delta Junction. (Ducker to Z et al., August 26, 1987 and Ducker summary of Presler interview, November 3, 1987 in U.S., BLM, OMPB files) As noted above, the great majority of Delta Junction residents have government or other wage-earning jobs. Dot Lake is the nearest settlement which the State classifies as "rural" for purposes of subsistence fish and game allocations, and its general subsistence area lies at least twenty miles east of the easternmost part of the withdrawal. (Martin, 1983, Appendix A)





Air, Soil, Water, and Vegetation Conditions

Air

The withdrawal area lies in a region with a typical continental subarctic climate characterized by a great diurnal and annual temperature variations, low precipitation, low humidity, short moderate summers, long cold winters, and great seasonal contrasts in sunlight duration. (Unless otherwise noted air, soil, and water information is from U.S. Army, 1980, pp. 2-3 to 2-17) The climate of the area is influenced by mountain ranges on three sides which form an effective barrier to the flow of warm, moist, maritime air during most of the year. The surrounding upland areas also tend to aid drainage or settling of cold arctic air into the Tanana Valley Lowlands. Extreme low temperatures in the winter are usually the result of the inflow of polar air masses, although prevention of absorption of solar radiation by persistent snow cover is a major contributing factor.

The yearly normal temperature for Big Delta near Fort Greely is 27.5 degrees F with extremes of 92 degrees F and -63 degrees F. (Arctic Environmental Information and Data Center, 1986) Annual water equivalent precipitation averages 11.38 inches, including 40.1 inches of snow. The normal wind speed at Fort Greely is 9.5 miles per hour. Winter winds are generally easterly along the Tanana River while the summer winds are generally southerly along the Delta River. (Wendler, Kodama, and Eaton, 1980, p. 5)

Major sources of air emissions within the study area during all seasons are vehicles and the burning of fuels, including wood, gasoline, diesel oil, and fuel oil. The major emissions from these sources are carbon monoxide, hydrocarbons, suspended particulates, sulfur dioxide, and nitrogen dioxide. Natural sources of particulates include high winds in the area blowing dust from dry stream beds and loess-covered hills, and from forest fires. Solid particulates are also a major component from wood burning for space heating, from ashes spread on icy roads, and from frozen water vapor emitted by internal combustion engines operating in air temperatures below -30 degrees F (ice fog). Within the withdrawal area itself, however, these emission sources are limited to occasional military and civilian vehicle use, helicopters and other aircraft.

Soils

Well-drained shallow loamy soils occupy low slopes of the Alaska Range and portions of adjoining terraces of the river valleys. Associated soils are wet silt loams or depressions with an overlying peat layer and permafrost. These occupy broad drainages throughout the area. Level flood plains of the Tanana and Delta rivers are occupied by stratified sandy to

silty soils having good drainage, with wet silty and sandy permafrost soils in the depressions. Deep peat deposits overlie these latter soils in low areas and are deep or absent adjacent to streams. Wide seasonal variation in temperatures occur in soils near Big Delta, even at moderate depths. (Aitken, 1964)

Shallow, well-drained silt loams with sandy to gravelly underlying material occupy most of the rolling uplands on the surface of the glacial moraines and alluvium east of the Delta River. Low depressions are occupied by wet silt loam with permafrost. Soils of the high foothills of the Alaskan Range are shallow gravelly and stony, occupying north-facing slopes, ridges, and steep slopes. Shallow wet silty to gravelly soils with permafrost occupy drainages and high valley bottoms. Rolling to steep uplands along the north portion of the study area (Yukon-Tanana uplands) are occupied by well-drained silty to gravelly loamy soils, with wet silty soils and permafrost in stream valleys. Permafrost is common throughout these soils on north-facing slopes and in drainage basins. Rocky land occupies steep mountain areas within the Alaskan Range, and outcrops in the Yukon-Tanana uplands.

Water

Most streams draining the study area have their headwaters in high, rugged mountains of the Alaska Range and all drain into the Tanana River. Nearly all are of glacier origin and are generally swift, steep, and carry large amounts of suspended sediments, particularly during the summer months. As these glacier fed streams leave the mountains and enter lower elevations, they become heavily braided through extensive gravel deposits.

During the open-water season the Delta River carries a suspended sediment load of 100 to 1,000 ppm. About 10-25 percent is clay size, 40-50 percent silt, and the remainder sand. Movement of bed load (course sands to gravels) occurs in the larger, faster channels during most of the flow season.

Low stream discharges typically occur during the winter (November through April) due to permafrost, ice formation, and storage of precipitation as snow and ice. Jarvis Creek, has a relatively well sustained flow in its headwater areas, but loses most of its water to groundwater as it flows onto the alluvial deposits of the lower elevations. Streams draining the Alaska Range respond slowly to the early summer heat, and generally do not reach their peak flows until July or August. During this period increased precipitation produces additional runoff.

Nearly all of the surface water in the Tanana basin is of acceptable chemical quality. None of the streams that have been sampled exceed standards suggested by the U.S. Public Health Service for drinking water.

**Plant
Communities**

Major vegetation communities in this area are coniferous forests, mixed forests, tall shrub, and herbaceous wetlands. Factors affecting the type and pattern of the vegetation are permafrost, depth to water table, slope, aspect, and fires. (The following vegetation and forest resource information is derived from U.S., Soil Conservation Service, 1986 and Alaska, Division of Geological and Geophysical Surveys, [1987].)

Alpine shrub tundra occur on the hilltops and upper slopes of the foothills in the southern portion of the withdrawal. Tundra vegetation consists of low and dwarf shrubs, dwarf birch, low willow, ericaceous shrubs, and dryas. On the middle slopes, below the alpine tundra and above the treeline, tall shrubs of willow, alder, and shrub birch form open and closed shrub cover. In the open tall shrub community, an understory of dwarf willow, labrador tea, alpine blueberry, spiraea, and/or grasses may be present. Mosses cover the ground on wet sites, while fruticose lichen are abundant on drier sites. Black spruce and white spruce are present at and below the treeline, in an open or woodland forest. A shrub layer of willow, birch, alder, blueberry, bearberry, and labrador tea is present in this forest community.

In the northwest corner of the withdrawal, a large north-sloping alluvial plain occurs. Tall willow and alder shrubs and scattered black spruce dominate the upper portion of the plain. On the lower slopes, the vegetation cover grades into black spruce bog with patches of dwarf black spruce and broadleaf scrub.



Open and closed coniferous forests and closed mixed and deciduous forests occur on moraines lying astride Jarvis Creek, Delta River, Delta Creek, and East Fork Little Delta River. The open coniferous forests consist of black and white spruce with a low deciduous shrub layer. The closed forests consist of white spruce, black spruce, birch and aspen. Numerous kettle hole depressions in all the moraine forests support ponds, aquatic vegetation, sedge tussock wetlands, and low shrub wetlands.

Smooth, gently sloping glacial outwash plains spread northward from the northern end of the moraines. On the outwash plains east of Delta Creek, in the central portion of the withdrawal, low ericaceous shrub and mesic graminoid communities cover the upper slopes. Tall and low willow and alder shrubs invade the lower slopes. West of the Delta River, a smooth, gently sloping outwash plain spreads northward toward the Tanana River. Dwarf tree scrub and willow and alder shrubs cover this area in indistinct patterns. Dwarf tree scrub includes stands of shrub-like conifers and stunted broadleaf trees. On the outwash plains, east of the Delta River, bogs of sedge tussocks, low ericaceous shrub hummocks, and scattered black spruce occur in the poorly drained sites. Mixed and white spruce forests, patches of fruticose lichen, and low shrub occupy the drier sites. Mixed forests of aspen, young white spruce, and young black spruce; aspen forests; and aspen, willow, and spruce scrub have developed on the plain near the mouth of Jarvis Creek.

Wide gravel covered flood plains are associated with Delta River, Jarvis Creek, Delta Creek, and East Fork Little Delta River. The flood plains are mostly barren gravel, sand, and silt. Vegetation cover is sparse in the low and active portion of the flood plain, and consists of scattered grasses, legumes, asters, goldenrod, and seedling willows. Balsam poplar, alder, and willow have developed on the higher and more stable areas of the flood plain.

Terraces occur as narrow benches above the flood plain. Scattered white spruce, balsam poplar, and aspen grow on the lower and younger terrace. Willow and alder shrubs are found in the understory. Mixed forests of aspen, white spruce, black spruce, and birch, and dense coniferous forest of white spruce and black spruce have developed on the higher terraces. Long, narrow depressions left by stream channels cutting the terrace are covered by sedge tussocks, low shrub hummocks, and scrub spruce and birch.

Timber Resources Commercial forests are identified in this area as open and closed coniferous forests of white spruce, closed deciduous forests of paper birch and aspen, and closed mixed forests of black spruce, white spruce and birch or white spruce, birch, and aspen. Because of the frequent fires in the area, these forests are mainly pole sized (5-9 inches DBH coniferous, and 5-11 inches DBH deciduous) or young reproduction stands. Coniferous stands are found east of the river in the southern

portion of the withdrawal, and west of the river in the northern portion of the withdrawal. Mixed forests occur west of the river and west of the coniferous forest and extend southward along the river to the southern edge of the withdrawal. This mixed forest grades westward into a deciduous forest. Patches of mixed and deciduous forests occur east of the river at the northern edge of the withdrawal. Small stands of potential commercial forests also occur on river terraces along Delta Creek and Jarvis Creek.

Most of the woodland forests are open black spruce and white spruce forests and open and closed mixed black spruce, white spruce, and aspen forests. Other woodland forest types are closed black spruce or black spruce and white spruce forests. These forests are mainly young reproduction stands. Most of the woodland forests occur between the Delta River and Jarvis Creek and on the lower slopes of the foothills west of Jarvis Creek. Patches of woodland forests occur west of the Delta River at the northern edge of the withdrawal.

The noncommercial forests are mostly open dwarf black spruce forests. Most of these forests occur west of the Delta River on the lower slopes of the foothills, on the moraines astride Delta Creek and the East Fork Little Delta River, on the plains in the northwest and north-central portion of the withdrawal.

The biological condition of the timber resource is affected primarily by fire, insects, and disease. Because of the frequent fires, many of the stands are immature. The spruce beetle (*D. Ruffipenis*) is the most damaging to the white spruce stands. The potential for an outbreak is always present. While no specific site data on disease is available for this study area, there is an average for the interior's timber. A study done by the U.S. Forest Service., estimates that 37 percent of the white spruce, 47 percent of the birch, 78 percent of the poplar and 82 percent of the aspen have decay in the merchantable stem. (Hutchison, 1967, p. 38)

Fire History

During the thirty-two years between 1956 and 1987 sixty known fires have occurred on the withdrawn lands. The largest of these burned 43,500 acres of State and federal land, including much of Fort Greely east of Jarvis Creek, in 1987. Other large fires took place in 1983, igniting 35,450 acres near Delta Creek, 1971, burning 17,500 acres west of East Fork Little Delta River, and 1956, when 8,000 acres were set ablaze in the lower One-hundred-mile Creek area. Incendiary devices ignited the 1983 blaze, lightning caused the fire in 1971, and miscellaneous causes started the other two fires. Thirteen percent of the burns in the last thirty-two years began through lightning, thus human intrusion in the area is responsible for increasing the natural amount of fire by about six times. However, recent history suggests that fire suppression efforts generally reduce the acreage consumed by fire to a seventh of the area which would be consumed with no control work. (Rowdabaugh, MSA; BLM, Alaska Fire Service file maps)

Fish, Wildlife, and Their Habitat



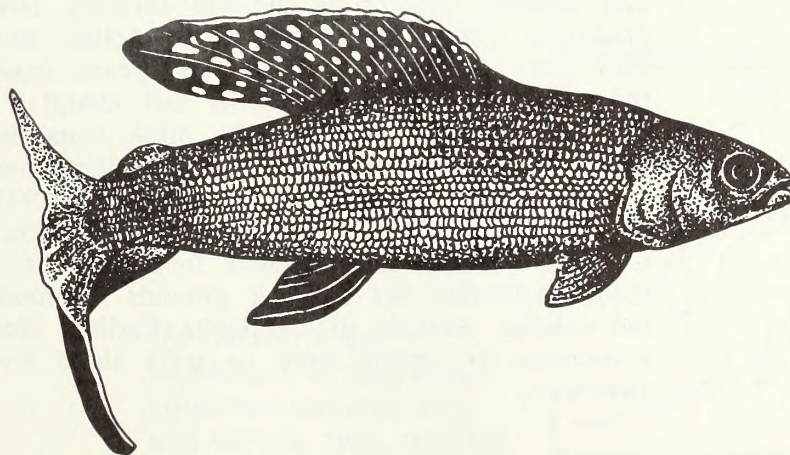
Fort Greely has a variety of landscape features, including physiographic forms and vegetation. These conditions result in habitats that support many different animal species. (Unless otherwise cited, all data in this section is derived from Spiers, MSA.)

Fish

The withdrawn area includes a glacier, numerous lakes and ponds, and four major streams, Little Delta River, Delta Creek, Delta River, and Jarvis Creek. The streams are all glacier fed and flow north to the Tanana River from the north slope of the Alaska Range.

Despite the abundance of water resources, there is relatively little quality habitat for fish. Although Arctic grayling migrate through them, the major streams are silt laden and do not provide a fishery on Fort Greely. A few clear streams flowing into these provide summer habitat for grayling, but none has been found to be an important spawning stream. While some lakes and ponds have native northern pike, sculpin, or northern longnose suckers, most are too shallow or oxygen deficient in the winter to support fish.

Fort Greely has a good fishery, but it is through stocking of nonnative, nonreproducing species. The Alaska Department of Fish and Game (ADF&G) has stocked fourteen lakes with rainbow trout, silver salmon, king salmon, sheefish, and grayling. One of these lakes lies west of the Delta River and is inaccessible by road while the other stocked lakes are readily accessible from the Richardson Highway. ADF&G usually stock these lakes every year. It is not known how much pressure is exerted on the Fort Greely fishery; no creel census is available.



Wildlife

Compared to other U.S. military posts throughout the world, Fort Greely has a large variety of game species. Big game includes moose, caribou, bison, Dall sheep, grizzly bear, black bear, and wolves. Trappers catch red fox, coyote, wolverine, lynx, marten, wolf, beaver, and muskrat. Small game consists of snowshoe hare, willow ptarmigan, rock ptarmigan, spruce grouse, sharptail grouse, and ruffed grouse. Even though the installation is dotted with thousands of kettle lakes and ponds, it is not a major waterfowl resting area. However, during migration a variety of waterfowl stop at Fort Greely. Included are many species of ducks, Canada geese, white fronted geese, snow geese, sandhill cranes, and snipe.



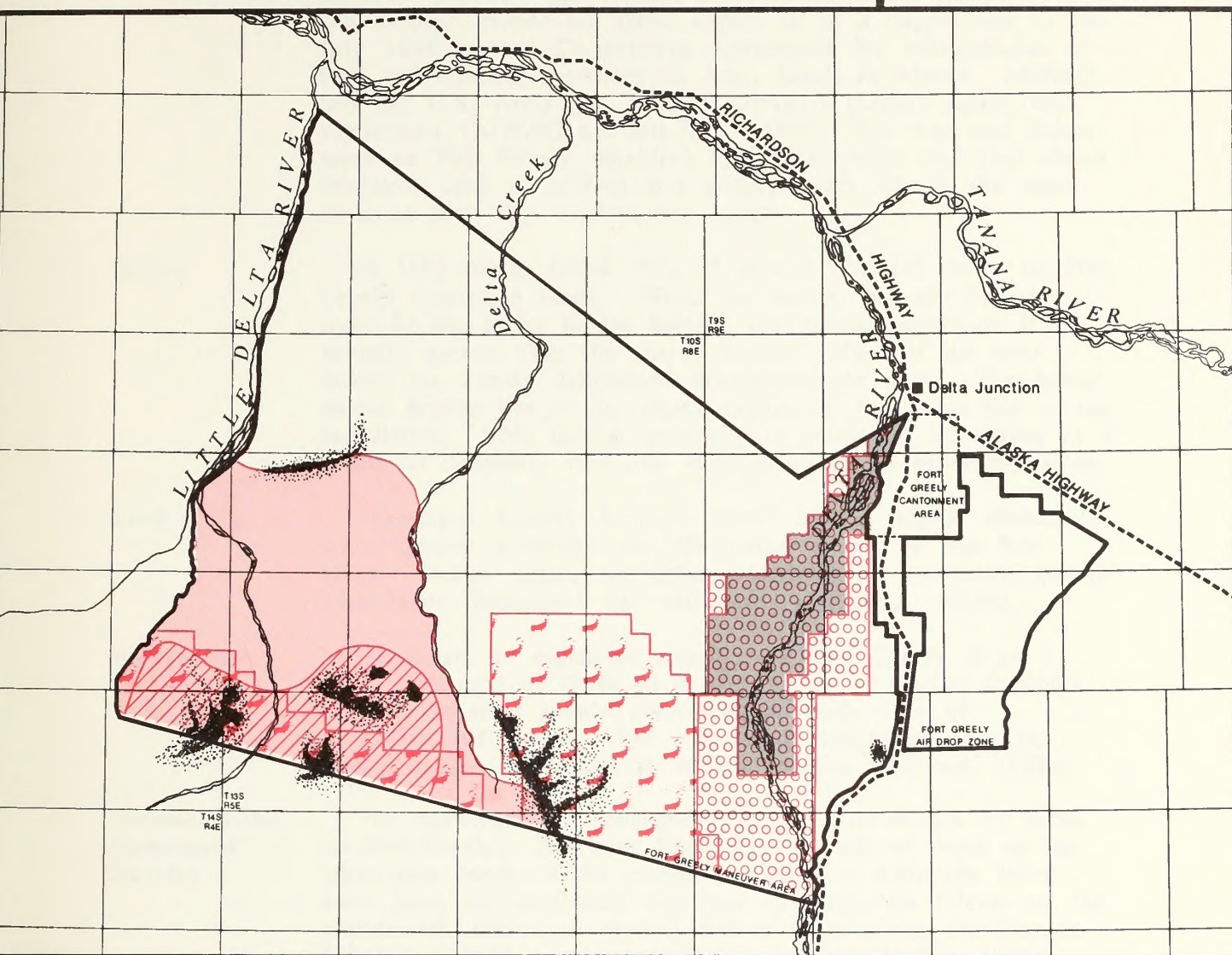
Such a variety of wildlife, of course, requires a diverse habitat. On the withdrawal there are large expanses of treeless moist tundra or black spruce bogs underlain with permafrost; extensive areas of taiga or boreal forest, consisting of stands of white spruce, aspen, poplar, and paper birch; ribbons of small streams through all habitat types which support lush willow growth and thereby provide food and cover for animals that would not otherwise be there; and many lakes and ponds, alpine tundra, and a glacier.

There is no history of military and other activities causing any major damage to wildlife habitat. Potential exists now and may become greater as the 6th Infantry Division (Light) is gradually brought to strength and trains more and more on Fort Greely. For the past several years, troops have used fields that serve as bison food plots and sharptail grouse dancing grounds. Army training units pitch tents and set up firing points in these same areas. So far, there has been no damage to the fields. However, in the spring of 1987, troops were firing from a field in which sharptails were trying to mate. Continued heavy use of these fields by the Army could render them unsuitable for dancing grounds or food plots. Similarly the calving grounds of the Delta Caribou Herd could deteriorate if troops have to train there frequently during the summer.

Fort Greely

DRAFT Resource Management Plan
DRAFT Environmental Impact Statement

Wildlife Habitat



Legend

Habitat



Dall Sheep

Unique or sensitive habitat



Caribou Calving Area*



Bison*

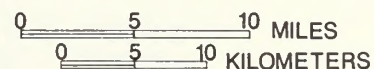


Sandhill Crane*

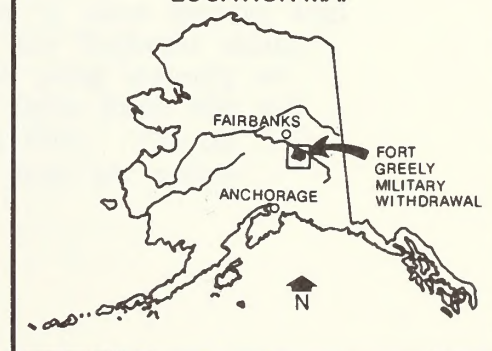
Grizzly Bear

*As defined in the supplement to cooperative agreement between Army and ADF&G, 1986. (ADF&G and 6th ID(L), 1986)

SCALE



LOCATION MAP



The accompanying map shows areas that are unique or sensitive habitats and are essential to the well-being of the wildlife species. The habitat areas indicated for bison, caribou and sandhill cranes are those agreed to in a supplement to the July 1986 revised Cooperative Agreement for Management of Fish and Wildlife Resources on Army Lands in Alaska. ADF&G and the U.S. Army 6th Infantry Division (Light) signed the supplement. (ADF&G and 6th ID(L), 1986) The map also shows areas on Fort Greely inhabited by grizzly bears and Dall sheep. Predators such as wolves and grizzly bears inhabit the same areas as prey like caribou and moose.

Moose

A 1984 survey found 391 ± 28 percent ($P < 0.10$) moose on Fort Greely controlled lands. Since this survey did not include some of the better moose habitat, the moose population is actually greater than the survey found. Most of the year moose are evenly distributed throughout the area. The better moose habitat lies in the alpine regions at the south end of the installation. This habitat generally is good and improving as a result of frequent wildfires stimulating large browsing areas.

Birds

Ptarmigan usually frequent some of the higher elevations while grouse generally are distributed evenly in the low lands. Ducks, geese, and other waterfowl are associated mostly with lakes throughout the withdrawal. (Spiers, 1988a)

Furbearers

There are 14 registered traplines on Fort Greely, 2 or 3 large ones west of Delta River and 10 or 11 smaller traplines east of the river evenly distributed on both sides of Richardson Highway. The variety of furbearers includes almost every kind found in interior Alaska. (Spiers, 1988a)

Threatened and Endangered Species

No threatened or endangered species are known to occur on Fort Greely. The most likely such species to occur on the withdrawn lands is the peregrine falcon. Although there have been no confirmed sightings of peregrine falcon on the withdrawal, there are several active nests along the Tanana River just north of the installation, and the bluffs on the Little Delta River might also provide suitable nesting sites.

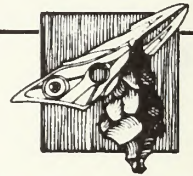
Wildlife's Role in Economy

Hunting, and to a lesser extent fishing and trapping, contribute to the local and regional economy. Hunters on Fort Greely generate about a million dollars a year. (See Appendix B.) Guides, outfitters, and charter flight services, which provide access and other services to most hunters west of the Delta River, and Delta Junction and Fairbanks stores, restaurants, and gas stations garner the great majority of these funds. Most hunters west of the Delta River hire air transportation from Fairbanks or North Pole. Charter services charge about \$130 to \$165 an hour per person

depending on the type of plane hired. A roundtrip to one of the gravel bar landing areas near the foothills of the Alaska Range costs a hunter approximately \$500. (DuBois, 1988)

The Alaska Department of Fish and Game stocks about a dozen lakes on the withdrawn lands. These attract local fishers who will expend money to drive to the lakes and supply their fishing needs. Local residents who trap on the withdrawn lands have analogous expenses. Although the total of these expenses is unknown, it is possible to estimate the value of the furs taken from Fort Greely. The withdrawal occupies approximately 8 percent of game management units 20A and 20D. During 1986-87 trappers harvested about \$50,000 worth of beaver, lynx, otter, wolverine, and wolf from these units. Assuming that trappers on Fort Greely gathered a proportionate share, then the fort accounted for \$4,000 of these sealed furs. If sealed furs accounted for approximately 20 percent of the total fur value, Fort Greely trappers would have accumulated \$20,000 in furs.

Cultural Resources



Fort Greely has archeological and historical cultural resources typical of Interior Alaska. The archeological sites can render information about Native life and the sites from the historic period are evidence of the travel and mining activity which occurred in the region. Although there may be paleontological resources, specifically Pleistocene vertebrate remains, buried beneath the floodplains of the maneuver area, none has yet been unearthed. (Unless otherwise noted, all the cultural resource information is derived from U.S. Army COE, 1986, pp. 93-156.)

Natives living along the Tanana traditionally made hunting forays up the Little Delta River and Delta Creek and utilized the Donnelly Dome area. (Andrews, 1975, pp. 55, 70-71, 83 and 1977, v. 1: 182-83) Archeologists have identified eighty-three prehistoric sites on the withdrawal ranging in age from the historic period back possibly to before 7000 B.C. These sites are on the approximately 5 percent of the withdrawal which has received adequate archeological examination. The modest amount of work thus undertaken has been concentrated east of Delta River, at the headwaters of East Fork Little Delta River, Delta Creek, and One-hundred-mile Creek, at the junction of One-hundred-mile Creek with Delta Creek, and at Koole Lake.

Twenty-nine of these sites are not eligible for the National Register of Historic Places and there is insufficient information on thirty-nine others to determine their

eligibility. Three sites and an archeological district containing twelve sites are eligible for the Register. One of these three separate sites is at Koole Lake (XBD-106) and is threatened by current recreational use. The archeological district is in an area which can be reached by road and is near a quarry south of Donnelly Dome. Three sites about which there is not enough information to determine eligibility are near Big Lake, which can be reached by road and is used as a camping and recreational area. Sites which may be eligible for the Register near Twin Lakes are similarly exposed to human activity.

There are three historic sites and a historic trail on the withdrawal. All are west of the Delta River. Sullivan Roadhouse on Delta Creek at the western edge of the Oklahoma Impact Area is on the National Register and a cabin on Ptarmigan Creek which probably dates from a molybdenum mining operation begun in 1914, is eligible for the Register. (Cobb, 1979, p. 123-24) Both are in good condition. Gordon's Roadhouse, which is in the lake-dotted region between the Delta River and Delta Creek, is in ruins. It and the Sullivan Roadhouse were on the Washburn-Donnelly winter sled trail, an alternate to part of the Valdez-Fairbanks route in the 1910s and early 1920s. (ARC 1912, p. 10; ARC 1921, p. 29; "Map of Alaska, 1923," Records of the Office of the Territories, Record Group 126, National Archives.)

Recreation



Hunting and Fishing

Hunting and fishing are the most common recreational activities engaged in on the Fort Greely withdrawal. There is no exact count of nonmilitary users of the land, but the Fort Greely Provost Marshal Office estimates that approximately five hundred people fly in to hunt on the roadless part of the withdrawal west of Delta River. Moose hunting is not allowed in the Delta Junction Management Area, which lies between Delta River and Jarvis Creek. (Butts, MSA, Recreation) Buffalo leave the fort before hunting season begins. However, they return to the eastern portion of the withdrawal in late winter in time for hunters to harvest about two a year on the fort. (Spiers, 1988b)

ADF&G estimates that recreationists spent over 2,600 visitor days fishing at Bolio, Mark (Sec. 18, T. 12 S., R. 10 E., F.M.), and North and South Twin lakes on the road system on the fort between the Delta River and the Richardson Highway. Others fish on ten other stocked lakes in the same area. ADF&G also stocks Koole Lake (Secs. 20-21, 28-29, T. 8 S., R. 6 E., F.M.), which fishermen access by plane or snowmobile.

**Camping and
Picnicking**

There are two cabins, one on North Twin Lake, built to serve on a trail system used for hiking and skiing, and one on South Twin Lake, built for use by the Boy Scouts, but which is used by the general public. There are a few concrete fireplaces between the North and South Twin Lakes and a few picnic tables at Bolio Lake.

Visual Resources

The visual character of Fort Greely varies greatly over the Manuever Area but is consistent over the Air Drop Zone. The Air Drop Zone and the northern part of the Manuever Area are nearly level with mixed black spruce, deciduous trees and shrubs, and muskeg. Steep mountains of the Alaska Range, lying just south of the withdrawal are a dominant visual feature of the southern part of the Manuever Area. The southern part of the Manuever Area has rolling plateau lands interspersed with kettle lakes. Strong visual elements are present as open areas, such as lakes, bogs and tundra, and rivers ranging from nearly level, widely braided floodplains to gorge lands, with steep adjacent rock outcrops.

From vantage points along the Richardson Highway and the roaded area of the Manuever Area east of the Delta River, the background distance zone on the southern and southwestern horizon is a dominant view of Mt. Hayes and the Alaska Range. Middle ground scenes vary from foothills, tundra, moraine features, the Delta River floodplain, and the cone-shaped Donnelly Dome. Donnelly Dome is the dominant foreground feature in the area along the Richardson Highway from 10 to 20 miles south of Delta Junction.

The roaded area east of the Delta River has several natural lakes, potholes, and kettle lakes which offer visual contrast to the usual view of unbroken walls of vegetation along interior Alaska roads. Since this area and the Donnelly Dome area are within the Delta Junction Management Area, chances to see moose are greater than other places in interior Alaska. The stretch of the Delta River Valley which passes through the fort has a free-roaming bison herd, one of three in the State, and the only one where it is possible to view the herd from road access. The State maintains a viewpoint just south of Donnelly Dome on the Richardson Highway which overlooks the summer range of the herd on the Delta River.

The most obvious visual intrusion through the withdrawal lands is the Trans Alaska pipeline, which is below ground from the Tanana River, north of the withdrawal, to a point west of Donnelly Dome where it is supported above ground on pylons until it leaves the area south of Donnelly Dome. There is a viewing area along the Richardson Highway just south of Donnelly Dome for those who are interested in this unique man-made feature.

Data gathered by the Alaska Department of Transportation and Public Facilities on vehicular traffic on the Richardson Highway indicate that a daily average of 240 vehicles passed over a permanent traffic counter in 1986 located at Trim's Camp, about eighteen miles south of the southeastern corner of the Manuever Area. There are no other data available on the number, location, and characteristics of the people



viewing the lands in the withdrawal. Most of the visual intrusions along the areas seen from the Richardson Highway and the roads between the highway and the Delta River are screened by timber, the primary intrusion being the roads.

Lands and Rights-of-Way



Lands

The planning area is withdrawn by Public Law 99-606, the Military Lands Withdrawal Act of 1986. The lands have been under a withdrawal for military purposes since 1961. There are several large impact areas within the planning area used for aerial gunnery training. Because of the hazards associated with military use of the lands, they are probably unsuitable for other uses or disposal without extensive cleanup of any unexploded ordinance. (Everett, MSA, Lands)

Rights-of-Way

The Trans-Alaska Pipeline System (TAPS) parallels the Richardson Highway within a fifty-foot-wide right-of-way passing through the Fort Greely Maneuver Area at several points. The proposed Trans-Alaska Gas System follows the existing TAPS pipeline through the planning area. (Everett, MSA, Rights-of-Way)

Energy and Mineral Resources



Fluid Minerals

According to data compiled by BLM's Division of Mineral Assessment, none of the land covered by this withdrawal is valuable for oil and gas. No interest has been expressed in oil and gas exploration or development on this land.

Non-Energy Leasable Minerals

A literature search on nonenergy leaseable minerals on Fort Greely has revealed no information on any of these minerals. There is no record or knowledge of occurrence of any of these minerals, which include phosphate, sodium, potassium, sulphur, and gilsonite. No public interest or concerns have been expressed regarding any of these commodities.

Coal

According to the data compiled by BLM's Division of Mineral Assessment, the land in the Fort Greely withdrawal is without value for coal. No public comments or concerns regarding coal resources have been expressed. However, the Jarvis Creek coal field is located in close proximity to the

withdrawn lands, in T. 14 S., Rs. 10 and 11 E., and T. 15 S., R. 10 E., F.M. It is 3 to 6 miles east of the Richardson Highway, approximately 6 miles directly south of Donnelly Dome, and about 4 miles from the extreme southern point of the withdrawn lands. (Wahrhaftig and Hickcox, 1955) Access to the field does not cross the withdrawal.

The reserves of minable coal are small relative to the extent of the coal-bearing formation. This is because few of the beds are greater than 2.5 feet thick, which is considered to be the minimum minable thickness. The coal is classified as subbituminous C (classification of the American Society for Testing Materials). There is an existing preference right lease covering the Jarvis Creek field. No coal has been mined under this lease to date. (Bissonnette, MSA, Coal and Fluid Minerals)

Locatable Minerals

There are no valid existing mining claims or mineral patents on the Ft. Greely withdrawal. No proposals for exploration, development, or processing operations have been made.

The mineral potential of the area is classified (M/C) according to the guidelines in Bureau Manual Section 3031.34. The level of potential is moderate (M) as shown by nearby mineral deposits within geologically similar settings. The level of certainty is (C), meaning that there is direct evidence of mineralization but little data is available at this time which support the estimated or actual reserves.

The most promising area for locatable minerals is near Molybdenum Ridge in the southwest part of the withdrawal. Prospectors and miners have explored a molybdenum and gold prospect on Ptarmigan Creek intermittently since 1914. A total of thirty-two claims were located on the creek, the most recent in 1954 and 1961. None of the claims are active. (Alaska, Division of Mines, Kardex 68-20 and 68-32) This prospect consists of relatively sparse molybdenite in quartz veins that cut granite. High-grade samples have contained as much as 2.71% molybdenite and a little gold. Mineral production figures are not available. A few tons of ore were milled but not shipped. (Berg and Cobb, 1971, pp. 210-12)

Routes through the withdrawal reach mining claims on State land. Several state mining claims are located just to the south of the Ft. Greely Air Drop Area on McCumber, Riley, and Ober creeks. No quantitative production records for these claims are available. They are in close proximity to the withdrawal, and one access route cuts through the withdrawal. Alternate routes may also exist. Another route, probably only usable in winter, crosses the Delta River near the southern end of the withdrawal and passes out of the fort into the foothills of the Alaska Range in T. 14 S., R. 8 E., F.M. It provides access to a lode deposit.

Miners can also reach placers on Portage Creek to the west of the withdrawal through the northcentral part of Fort Greely. There were federal claims, currently abandoned and void, staked on Chick Creek and Beaver Creek just to the west of the withdrawal along this same access route. Again, no production information is available on these claims. (Bissonnette, MSA, Locatable Minerals)

**Mineral
Materials**

The mineral materials potential of the area is classified (H/D) according to the guidelines in Manual Section 3031.34. The level of potential is high (H), due to extensive alluvial deposits in the area. The level of certainty is (D), which indicates abundant direct and indirect evidence to support the existence of mineral materials.

There is high potential for the occurrence of mineral materials in the northern part of the withdrawal and along the Delta River and Jarvis and Granite creeks. Deposits in the interior of the withdrawn area may be available for very localized uses such as trail maintenance.

A total of eight material sales or free use permits have been located on the withdrawal, all of which are presently closed or inactive. A number of other material sales and free use gravel pits are located close to the withdrawal along the Richardson Highway and TAPS route.

There are no ongoing mineral material extraction operations but the Alaska Department of Transportation and Public Facilities expects to do reconstruction of the Richardson Highway between Delta Junction and Paxson in the near future. A proposed Trans-Alaska Gas System would parallel TAPS and would require substantial mineral material.



CHAPTER 3

ENVIRONMENTAL

CONSEQUENCES

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Chapter 3

Environmental Consequences

Introduction

This chapter addresses three concerns. First, it presents estimates of the timber, mining, and other developments which could occur under the various management plans presented in Chapter 1. The envisioned scenarios comprise the best projections of members of the Army-BLM planning team, and are a basis for estimating the environmental consequences of the alternatives. The chapter then describes the anticipated effects of implementation of the different plans on air, soil, water, vegetation, wildlife and wildlife habitat, visual resources, the local economy, and subsistence. Finally, because of the importance of recognizing the military's use of the lands in determining the appropriate management alternative, the chapter also portrays the potential impact of the alternatives on military activities.

Development Scenarios

Preferred Alternative

Recreation

The Preferred Alternative would maintain essentially the same access for nonmilitary use as currently prevails on the withdrawn lands. The Recreation Activity Management Plan may broaden the recreational uses, and any clear cutting which may follow from the Forest Management Plan could marginally improve hunting opportunities. These changes over the life of the withdrawal would gradually increase public use of the land from an estimated 8,000 visitor days each year to approximately 9,000 visitor days each year by the turn of the century.

Forestry

Although the timber resources may allow over a thousand acres to be cut each year and still sustain the forest's yield, current demand for forest products makes it unlikely that even a hundred acres would be cut extensively in any year during the life of this withdrawal. Alaska's Division of Forestry reported that 1.4 million board feet and 1 million board feet were harvested from all lands in the Delta Junction area in 1985 and 1986, respectively. (Alaska, Division of Forestry, Delta Junction, 1987) A clear cut on the withdrawal of less than one hundred acres could supply half this amount of timber.

Because of the limited demand, timber would probably be sold in clear-cut units of up to 100 acres. Crawler tractors would drag logs to a landing area from which trucks would transport them off the withdrawal. Heavy logs pulled over the ground would often cut through the vegetative ground cover. This ground scarification exposes mineral soil, a condition necessary for effective regeneration of birch, aspen, and spruce. On nearly level and dry sites the tractors can work during the summer; elsewhere such work would be limited to periods when the ground is frozen. Loggers would be required to conduct adequate slash disposal. A common method of disposal is to burn the residue after the harvest to control insects and disease, reduce fuel, and promote regeneration of white spruce, birch, and aspen.

Most of the commercial timber west of the Delta River is in the impact areas. Moreover, the timber on that side of the river is not readily accessible by road. Consequently, logging would focus on the areas east of Delta River, much of which can be reached from Meadows Road. Spur roads of less than a mile may be necessary to remove logs from landing areas.

Minerals

This alternative calls for a mineral assessment of the withdrawal. An assessment for Fort Greely most likely would begin with a search of literature for evidence of mineralization followed by a ground survey of selected portions of the withdrawal. The plan allows for the opening of the withdrawn lands to the operation of the mineral laws after an assessment, consideration of impacts to the military's mission, and promulgation of regulations "to assure safe, uninterrupted, and unimpeded use of the lands." (P.L. 99-606)

Preliminary literature searches indicate there is no leasable mineral potential and limited potential for locatable minerals. Prior to the establishment of the withdrawal, miners located thirty-two claims along Ptarmigan Creek. But there is no evidence that any minerals from them ever made it to market and none of the claims are currently active. Access to these locations is difficult and it is common for only a small proportion of Alaskan mining claims ever to be developed, even in areas with better access than exists to Ptarmigan Creek. For example, BLM projects that only one operating mine would develop from every 100 placer claims or every 300 lode claims along the Utility Corridor. (BLM, Arctic District, 1987, p. 4-5)

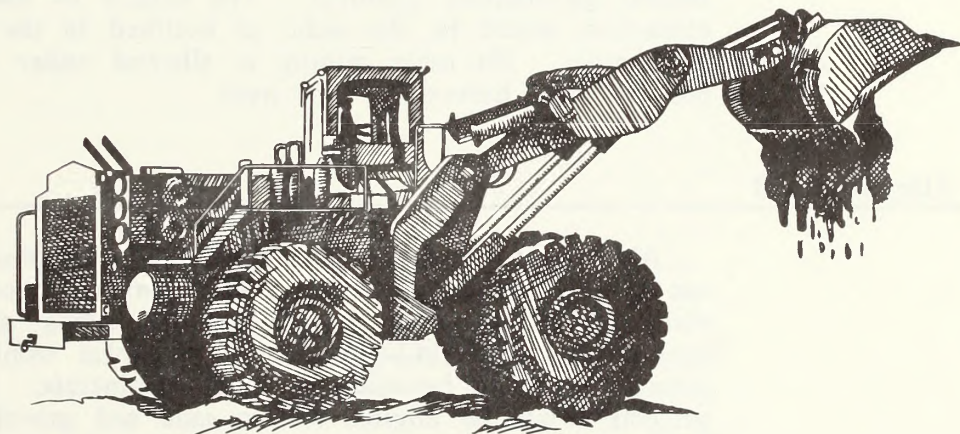
If the assessment indicates sufficient mineral value and other criteria are met so that the withdrawal or some portion of it is open to the operation of the mineral laws, field sampling may commence. In typical placer prospecting, if panning or geochemical sampling of creek beds indicates a promising area, further testing of the deposit can be accomplished by digging sample holes or trenches perpendicular to the course of the stream channel. Miners

use earth moving equipment, churn or rotary type drills, or hand equipment to dig the holes or trenches.

Exploration of a lode deposit begins with a geological mapping effort. Rock samples and pan concentrates of stream sediments are collected on a regular grid pattern. Mineral or geochemical concentrations above normal can prompt further exploration with a portable rotary drill to collect additional samples at depth. Operators move the drill from one location to another on tractor-pulled skids, on all-terrain vehicles, or by helicopter. Drilling is usually done in a grid pattern to establish the quality and quantity of the deposit. If it is determined that the deposit can be developed economically using sound mining practices, operators develop a plan through engineering studies, obtain financing, and begin mining.

If a mine developed in the Ptarmigan Creek area, it probably would be a small placer mine employing about three people and working about four acres a year. It would require an access road of at least a mile from an airplane landing area on the creek. Since such a road would impact at least three acres the total operation would exceed five acres impacted each year and require that a plan of operations be submitted to and approved by BLM before mining begins (43 CFR 3809). Other activities or support facilities at a typical placer mine include exploration of new ground to be mined in the future; construction and maintenance of equipment sheds, bunk houses, cookhouses and workshops; and repair and reconditioning of equipment used at the mine.

A lode mine could develop on the withdrawal. Lode mining may involve either of two main methods of mining, open pit or underground. The underground method is the most likely during the life of this plan. Heavy equipment could be moved



across country during winter or the airstrip and access road could be improved so equipment could be brought in during the thaw season. In a small underground mine, surface disturbance occupies about two acres not including the access road. The mine portal and associated ventilation shafts occupy minimal area, usually less than one acre. Access roads and other facilities would occupy enough additional land that such an operation would probably require an approved plan of operations to be in compliance with 43 CFR 3809.

Besides allowing mineral materials sites for Alaska Department of Transportation and Public Facilities' (DOT/PF) projects as mandated by law, the Preferred Alternative would permit sale of mineral materials. The proposed Trans-Alaska Gas System (TAGS) pipeline is the most likely buyer of Fort Greely's sand and gravel. BLM projects that the DOT/PF may require two mineral material sites and that TAGS would want to purchase sand and gravel from about five such sites in the withdrawal along its route. Mineral material sites generally are developed as near as possible to the location the material is to be used. Most of the sites to be developed on Fort Greely probably would be located not more than 3/4 mile from the Richardson Highway or the pipeline right-of-way.

Alternative A

Under Alternative A, which reflects a continuation of current management, there would be little change in the public's use of Fort Greely. Hunters and other recreationists spend about eight thousand visitor days annually on the fort, reaching it by flying to the area west of the Delta River or driving on the road system east of the river. The public can still gather dead and down wood on the withdrawal and the Alaska Department of Transportation and Public Facilities and private developers can still obtain mineral materials with federal government approval. The effects of sand and gravel extraction would be the same as outlined in the Preferred Alternative. No other mining is allowed under Alternative A, nor will any harvest of live trees.

Alternative B

Alternative B would place greater restrictions on public use of the withdrawal than currently exist. Access for virtually all nonmilitary activities, including all recreational uses, would be prohibited. The withdrawal would remain closed to mining locatable or leasable minerals. DOT/PF projects would be eligible to use sand and gravel from the withdrawal, but sales of mineral materials would be forbidden. Some timber harvests would be allowed, but these would only be in areas the military needs land cleared.

Alternatives C, D, and E

The possible development scenarios for Alternatives C, D, and E are similar. Each generally preserves current uses while opening the withdrawal to some extent to both timber and mineral development. The alternatives differ primarily on the emphasis they place on preserving or enhancing habitat and recreational values while also offering economic opportunities.

The scenarios for timber harvests are much the same as for the Preferred Alternative. At most, loggers would clear one hundred acres a year. The alternatives differ primarily in their emphasis on protection of other resources.

These alternatives permit the operation of mineral location and leasing laws. However, there is no indication that any leasable minerals exist on the withdrawal. It is also questionable whether mining for locatable minerals would prove feasible on Fort Greely. Should a placer or lode mine develop on the withdrawn land, the scenario for such operations would be similar to that for the Preferred Alternative, except that these alternatives open some or all of the withdrawal to the operation of the mineral laws only pending the promulgation of regulations--a mineral assessment would not precede such an opening. Alternatives C, D, and E also permit mineral material free use for DOT/PF projects and sales. The scenario for the extraction of sand and gravel in these alternatives would be the same as for the Preferred Alternative.

One important distinction between these three alternatives is the amount of recreation which is likely to occur. While Alternatives C and E would not significantly affect the number of visitor days, actions to encourage recreation in Alternative D would increase visitor days from 8,000 to 13,000. All of the increase would reflect greater use of the area east of Delta River.

Environmental Consequences Common to All Alternatives

Air, Soil, Water, and Vegetation Land uses would comply with federal and state laws and regulations related to air, water, and soils. Any statements about potential erosion and sedimentation differences among alternatives mostly refer to slight differences in low potentials. With continued full compliance, there should be only small impacts on air, water, and soils. Realistically, there are lapses in surveillance and compliance and some impacts do occur. All of the proposed actions for this plan have the potential to impact air, water, soils, and vegetation resources in the withdrawal. Effects depend on the degree of use, type of development, and the location of the activity on the landscape.

Fine grained materials in the soils of the withdrawal and the presence of shallow ice-rich permafrost make it likely that disturbance or removal of the insulating ground vegetation would result in soil erosion. Water from the melting ice may percolate through the soil or run down slope, transporting soil with it. The extent of erosion would depend on the steepness of slope, aspect, amount of ice in the ground, severity of disturbance or removal of the vegetative ground cover, and the type of mitigation applied.

Settling of sediments or dust into interstices of the stream beds can damage fish habitat. Dust, generated by traffic or winds, settling on leaf surfaces can interfere with light absorption and gas exchange and decrease plant photosynthesis and respiration. Dust which accumulates on snow decreases the amount of solar energy reflected off the surface, and increases the rate of spring snow melt. The amount of dust generated from man-caused erosion is small compared to large naturally exposed areas in river floodplains and glacial outwash plains.

The Trans-Alaska Pipeline System (TAPS) would contribute only a small amount of sediment from the maintenance work pad. The oil spill potential is small.

Under all alternatives, the DOT/PF may obtain sand and gravel from the withdrawn lands. Approximately two sites might develop on the fort. All the alternatives except Alternative B also allow sales of mineral materials. Approximately five of these might be located on the withdrawn lands. A mineral material site may have little or no organic materials that must be stripped and saved for future respreading or the site may have from one to six feet of material that is pushed to one side and saved. Bulldozers strip the overburden and break up the consolidated material. Bulldozers can generally dig to a depth of ten to twelve feet. If the material is deeper, drills are used and a series of holes are loaded with explosives and detonated, fracturing the material. The material is loaded into dump trucks by front end loaders or backhoe excavators. The trucks then haul the material to the location where it is needed. On big jobs with short hauls,

because of speed and lower operation costs, operators use scrapers instead of dump trucks and front end loaders.

Authorized officers can require specific measures in reclamation plans (43 CFR 3602.1-2). Reclamation of material sites often includes the following actions. The sides of the resulting pit are sloped to a 3:1 slope gradient or less. The floor of the pit is leveled to prevent the accumulation of water which may become a hazard to animal and human life. The saved topsoil and organic material are then respread over the side slopes and access roads and fertilizer is applied to allow reestablishment of natural vegetation and to decrease erosion. Seeding or planting maybe used in areas where quick revegetation is needed.

Cultural Resources

Fulfilling the Army's *Historic Preservation Plan for U.S. Army Lands in Alaska* would document about thirty-nine additional cultural resource sites. Based upon past experience in this area, approximately 20 percent of these, or eight sites, would prove eligible for the National Register of Historic Places.

Subsistence

None of the alternatives would have any notable impact on subsistence. There is little or no subsistence use of Fort Greely, although, except for its impact areas, it is open to such use. Subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake. Some relatively limited fur trapping occurs on the withdrawal by residents of the Delta Junction area, who otherwise participate in the general nonsubsistence-oriented life-style of the area.

ANILCA 810(a): Consideration of the Availability of Other Lands and Other Alternatives

Throughout the planning process, the joint BLM-Army team has planned for all and only the Fort Greely lands which required such an effort as a result of the Military Lands Withdrawal Act of 1986. Consequently, this planning effort is considering all appropriate lands so that there are no "other lands" which could be considered. The six alternatives discussed in this section constitute the "other alternatives" required by ANILCA Sec. 810 for consideration.

Environmental and Military Consequences of the Preferred Alternative

Air, Soil, Water, ORVs and Vegetation

Regulations [43 CFR 8341.1(f)(4) and .2(a)] give minimum standards for operating ORVs on public lands. They provide that ORVs shall not cause undue damage or disturbance to soil, wildlife, wildlife habitat, improvements, or cultural or vegetative resources. Initial damage from ORVs can range from crushing to uprooting of vegetation. Crushed vegetation can regenerate and recover within one year. Uprooting of vegetation and disturbance of vegetative ground cover renders the underlying soil unprotected, creating the potential for erosion or ground subsidence. The restrictions proposed in this alternative on nonmilitary ORV use lessen the potential for damage to soil, water, and vegetation. These restrictions limit the weight of ORVs used and also limit ORVs to travel over low erosion soils during summer and to periods of adequate snow cover. Under equal conditions, the lighter vehicles would inflict less damage to the vegetation than heavier vehicles. A thick layer of snow would help protect the vegetation from damage under tracks and tires, thereby, protecting the underlying soil. Although limiting travel to low erosion soils would not protect the vegetation and soils from disturbance, it reduces the potential for erosion and sedimentation.

Under this alternative recreation is expected to increase by 1,000 visitor days a year. Because current recreation use has had little impact on these resources, it is unlikely that this modest increase in visitor days would lead to adverse effects on air, soil, water, or vegetation.

Habitat Management Plan (HMP)

To date there is no evidence that there is a water quality problem on the withdrawn lands. A water quality control program, as is to be contemplated in the HMP, could provide more definitive information and monitor any changes in quality, thus providing an opportunity to remedy any problem promptly.

Forestry

Although ground scarification and slash burning assist in the regeneration of birch, aspen, and spruce, they create a potential for erosion by exposing mineral soil. Factors such as drainage, steepness, and presence of ice-rich permafrost determine the erosion potential. Because most of the commercial timber is located adjacent to the Delta River, erosion can both undermine revegetation and affect the Delta River. Regeneration on actively eroding areas would be delayed until the soil stabilizes. To control erosion, tractor logging can be confined to well-drained soils on gentle slopes.

A buffer strip at least one hundred feet wide left at the edge of streams would serve to block sediments.

Recreation

An increase of visitors to the withdrawal is projected. Traffic dust created by visitors would adversely impact the roadside vegetation community. Dust settling on roadside vegetation could cause changes in the plant community when the more dust-sensitive plants die. Where human activities occur some pollution from garbage disposal and oil spills is expected. However, because current recreational use of about 8,000 visitor days each year has had little impact on these resources, it is unlikely that an additional 1,000 visitor days will notably disrupt air, soil, water, or vegetation.

Placer Mining

Mining can have substantial impacts on these resources. Placer operations may involve hydraulic, mechanical, or drift mining techniques. Bulldozers or draglines generally remove the overburden, although hydraulic monitors may be used. The amount of overburden removed in stripping operations varies from one to ten feet or approximately 1,600 to 5,300 cubic yards per acre stripped. Where the land is cleared for roads and mining, a potential for erosion and sedimentation is created through runoff from rain and snow melt. This is usually considered a short-term impact.

Bulldozers loosen pay gravels and push it into a pile for feeding onto a sorting device called a grizzly. Normally, miners in a small operation like that described in the scenarios for the Preferred Alternative would process from 10 to 1,000 cubic yards of gold bearing gravels per day throughout the nearly one hundred day season and use from 100 to 3,000 gallons of water per minute to wash the gravels. Typically, between 50 and 90 percent of the water used in the processing system is recycled from the settling ponds and the rest is made up from streams diverted around the operation. Coarse tailings are removed from the processing area by bulldozer or loader and stacked for later reshaping or used to build settling ponds.

Federal regulations, specifically 43 CFR 3809, require rehabilitation measures. Generally, properly designed, constructed, and maintained ponds are capable of settling most settleable solids required by the Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation. Ponds are not capable of removing all the turbidity that is created during the processing phase. Additional treatment of the mine water through the use of flocculants, ground filtration systems, total recycle of all mine waters, redesign of the processing plant or a combination of the above is necessary to reduce turbidity.



Heap leaching poses dangers of cyanide reaching the area surrounding the leach pile. To prevent this the ore is placed on an impermeable pad of asphalt, reinforced concrete, or geosynthetic material and the solution with the dissolved precious metals drains to a pond with an impermeable liner. Surface drainage must be diverted from the pad and pond and the area or a secondary liner or leachate collection system must be monitored by sampling and testing to determine whether any contamination of the groundwater takes place. Ponds should be designed to handle the runoff from a one-hundred year flood, plus twenty four hours of drainage from the heaps. (Lopes and Johnston, 1988)

The coarse tailings not used for other mining purposes remain after the area is mined out and are reshaped to harmonize with adjacent natural contours. Topsoil required to be saved is respread over the reshaped ground to promote vegetation by natural species or according to requirements in the approved plan of operations. If any mine develops on the withdrawn lands and it has the typical amount of fines in its tailings, it will normally take over thirty-five years to establish a stable, sustaining productive community of open tall shrubs. This is generally a tall willow or alder community with a canopy cover of at least 50 percent in vegetated areas, where dying vegetation is replaced by seed or vegetative means. Such a community can sustain moderate pressure from wildlife, especially beaver or browsing moose, and may continue on the site indefinitely, or be successional to a deciduous forest with mixed spruce. Fertilizer is sometimes applied to improve plant nutrition. Seeding or planting may be used where quick vegetative cover is essential.

Lode Mining

Lode mining creates different impacts than placer operations. The milling of ore from an underground mine generally involves grinding the ore, processing the ground rock, concentrating the ore, and refining the metal from the concentrations. A small mine and mill processing one hundred tons per day would require 50 to 2,000 gallons of water per minute from nearby streams or well. The water would subsequently be sent through settling ponds before draining into natural water bodies. The effectiveness of these ponds would be similar to those used for placer operations.

The disposal of tailings from such a mine would consist of two main products, waste rock that was not processed in the mill and finely ground material from the mill. Operators commonly deposit the waste rock on a surface site located on a hill slope or in a valley. Because underground mining is selective, minimal waste rock is mined.

Mill tailings would require a much larger area for disposal. This material is generally placed in settling ponds, allowed to drain, and then reclaimed when the impoundment is full. Ninety percent of the water is recycled to the mill for reuse. The tailing ponds are usually located on stable soils within valleys. The amount of land necessary for a tailing pond to handle the tailings of a lode mine producing one hundred tons of ore a day, for a four-month season, over a seven-year mining life is about one acre for a pond 100 feet wide, 300 feet long and 10 feet deep. When the mining operation has ended, these tailing sites are stabilized and placed in such a condition to allow natural revegetation.

Fire

Fires result in beneficial and adverse impacts. The effects vary with fire severity. Generally, after a fire, the underlying soil exhibits an increase in active layer thickness and available plant nutrients. This results in a more productive site and plants respond with vigorous growth. Fires that burn through the insulating vegetative ground cover could result in thawing of the underlying permafrost. On slopes, permafrost rich in ice could release enough water to cause mass downhill movement of soil. Should the soil move into drainages, sedimentation of nearby streams would occur.

These impacts can also occur as a result of suppression activities. Firebreaks are continuous strips one to eight feet wide where all the surface organic material is removed, exposing mineral soil. Returning organic matter to the strips, seeding, or use of water bars to divert water from highly erodible areas of firebreaks can reduce erosion.

This alternative would lead to little, if any, increase in fires, and fire suppression would continue as under the current management. Past fires and suppression efforts have not severely damaged the ground and have not required site

rehabilitation. Adverse impacts to air, soil, water, and vegetation have not been significant.

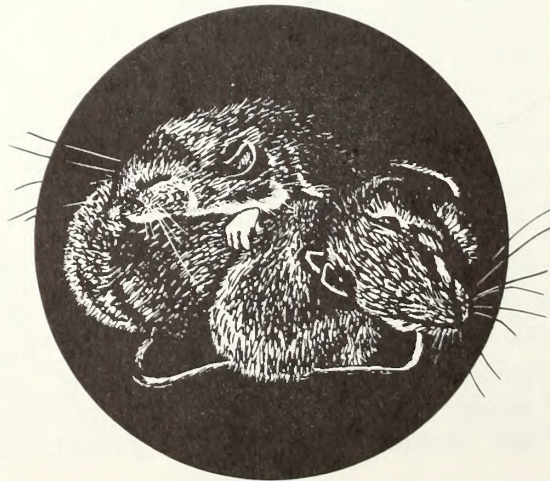
Fish and Wildlife

The withdrawn lands host healthy wildlife populations. Currently hunters harvest approximately fifty moose, forty caribou, and two or three bison annually on the withdrawn lands, as well as indeterminate numbers of small game.

The Preferred Alternative probably would not lead to any significant alteration in this harvest or in the numbers of wildlife. Access requirements would remain essentially the same. Actions to protect Dall sheep, caribou, and sharptail grouse habitat and to protect habitat in general, such as restrictions on ORV use, should help prevent diminution in wildlife populations, but probably would not significantly increase their numbers. For example, disruptive activity near mineral licks could hurt Dall sheep. No such disruptions currently occur. The action statements designed to prevent disruptions in the future when general military activity on the post may increase and when mining may occur would maintain what is currently the *de facto* level of protection.

The Habitat Management Plan may develop action which could increase or redistribute wildlife populations, most likely bison and small mammals and birds which can make use of the same habitat as bison. The modest clear-cut timber and fuel wood harvests which may result after a Forest Management Plan also would provide increased habitat for some small game, birds, rodents, and moose, thus slightly increasing their numbers.

It is possible that loggers would develop short spur roads to reach timber stands. This might make it easier to harvest more small game. However, it is unlikely to increase moose harvest because the timber stands most susceptible to harvest are in an area bounded by the Delta River and Jarvis Creek which the State's Board of Game has closed to moose hunting.



The harvest reports required of hunters and trappers can help management of wildlife. The prescriptions of the Recreation Activity Management Plan would not increase consumptive uses enough to significantly affect game populations.

Should mining ultimately develop on the withdrawal, miners would probably account for some small increase in the take of game animals; the take in bears in the Ptarmigan Creek area could be significant. Mining activity itself should not impact wildlife in any important way, provided that it is conducted a sufficient distance from critical habitat such as mineral licks. However, if miners fail to properly dispose of garbage, they could attract animals to their camp. Bears attracted to garbage threaten human life and property and are often destroyed.

Visual Resources The most significant degradation of the visual values of the withdrawn lands would probably be from mineral material extraction. Sand and gravel sites would most likely be near the road network between the Richardson Highway and the Delta River. However, this impact can be limited if operators properly rehabilitate the sites as indicated on page 89. Timber harvests are also most likely to occur in this accessible part of Fort Greely, but their visual impacts would be lessened by retaining an uncut buffer along major recreational roads.

Cultural Resources Impacts to cultural resources would be sporadic and unique to each development undertaken. Small timber harvests, mining, and recreational developments could disrupt cultural materials. However, a survey prior to clear cutting or mineral extraction should retrieve any archeological or historical information likely to be disturbed by loggers or miners. The very modest growth in recreational use may cause a slight increase in unorganized collecting of artifacts. The Historic American Buildings Survey of the Ptarmigan Creek cabin would preserve that structure's cultural information.

Socioeconomics By preserving current opportunities for hunting, fishing, trapping, and other recreation on Fort Greely, the Preferred Alternative would continue to allow the local and regional economy to benefit from supplying recreationists' needs and from gaining the meat and fur value of the fort's wildlife. BLM and Army resource specialists' analyses of these uses are summarized in Appendix B. They arrive at different monetary values, but suggest that current recreational use of the withdrawal generates approximately \$1 million annually for the local and regional economies. Guides, outfitters, and air charter services, which provide access and other services to most of the visitors to the withdrawal west of the Delta River, and Delta Junction and Fairbanks stores, restaurants, and gas stations garner the great majority of these funds. Much of this value is generated by big game hunters on the area of the withdrawal west of the Delta River.

As explained in the scenario for the Preferred Alternative, Fort Greely could furnish the entire local lumber and fuel wood market, valued at about \$500,000 annually. However, State and private offerings of this resource meet the local capacity. Thus, there would be little or no total dollar value to the economy from offering federal timber and fuel wood sales. However, harvests on Fort Greely may promote more consistent employment of loggers throughout the year. Currently, few State or private stands of saw timber are available on land dry enough to permit summer harvests. Fort Greely offers land which would allow summer cutting of saw timber. Fort Greely also offers fuel wood closer to Delta Junction than private landowners and the State, and thus would enable more efficient harvesting. (Edgren, 1988)

Permitting the sale of sand and gravel would assist private development. Mineral materials are available on State land near the fort. But transporting them to projects developed on the withdrawal, such as the TAGS, would be far more expensive than utilizing readily available resources at the development site. If the TAGS requires five mineral material sites on Fort Greely, the proceeds to the government from the sales could be about \$500,000.

Because of the uncertainty of the feasibility of mining on the withdrawn lands, it is exceedingly speculative to estimate the economic impacts of opening them to the operation of the mining laws. However, if a small placer mine such as outlined in the scenario descriptions above developed, it would probably employ three seasonal miners and result in adding one full-time job equivalent to Alaskan employment. The average mine of this size generated about \$77,000 for the Alaskan economy in 1985. (Alaska, Department of Commerce and Economic Development, 1986, pp. 6, 15)

Military

The elements of this alternative which protect wildlife habitat have modest impacts on training. Restricting Army and Air Force activity to protect the caribou herd during calving season over the past few years has required that the military cease training involving at least part of the impact areas for only two or three days each year. Restricting training in critical sheep habitat would have minimal impact on the military because very little ground training occurs in the remote mountainous region of the withdrawal used by Dall sheep. Minimizing disruption of sharptail grouse dancing grounds during mating season (April 20 to June 1) would have minor effects on military training. The military does not frequently use these areas--in the last seven years the Army has only used one of the dancing grounds one time during the mating season--and alternate sites are available. Because the Forest Management Plan would give military need the highest priority in determining whether, where, and when to have timber harvests, there should be little or no impact on military activities. It would be important for any timber harvest not to deteriorate military training potential of the

withdrawn lands by clearing acres more suitable for training in a forested state or by prompting traffic which would significantly hinder military movement.

If the withdrawn lands are opened to mineral development after the mineral assessment, training would be affected to the extent that mines are developed. Under this alternative some small acreages, possibly near Ptarmigan Creek, may be mined and the land on which the mining takes place and areas immediately adjacent to it largely lost to military training.

The Modified fire management classification for the area between the Richardson Highway and the Delta River could permit fires which would obscure the vision and prevent training and testing utilizing the various firing ranges in this area.

**Compliance
with Section
810 (a) of
ANILCA**

Uses and Needs

The Preferred Alternative would leave Fort Greely substantially open for any ongoing subsistence use, which, at present, is low to nil. Such usage is not likely to increase, since subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake.

Section 810 (a) Finding for the Present Management
Alternative

The Preferred Alternative would not cause a significant restriction to the subsistence use of Fort Greely, since little or no such activity now occurs and the fort would remain open for such usage, subject to military requirements to close portions of the withdrawn lands for training and safety reasons.

Environmental and Military Consequences of Alternative A

Air, Soil, Water, and Vegetation There has been little impact to these resources by current nonmilitary use. Some damage has occurred due to the ORV use permitted in the past. However, the impacts to air, soil, water, and vegetation are not significant. The impacts to these resources due to fires are the same as described for the Preferred Alternative.

Fish and Wildlife The withdrawn lands host healthy wildlife populations. Currently hunters harvest approximately fifty moose, forty caribou, and two or three bison annually on the withdrawn lands, as well as indeterminate numbers of small game. The increase in military personnel at Fort Wainwright with the full deployment of the 6th Infantry Division (Light) may increase hunting pressure on these resources. (Military personnel who have lived less than a year in Alaska may hunt on military bases without purchasing a nonresident hunting license.) However, this additional hunting pressure is not likely to be large enough to significantly impact the healthy wildlife populations on Fort Greely.

Visual Resources Besides the effects continued military operations have on visual resources, the most significant degradation of the visual values of the withdrawn lands would probably be from mineral material extraction. Sand and gravel sites would most likely be near the road network and near the route of TAGS. However, this impact can be limited if operators properly rehabilitate the sites as indicated on page 89.

Cultural Resources Impacts to cultural resources would be sporadic and unique to each development undertaken. Under this alternative this would largely be limited to disturbances caused by military construction and training and by extraction of sand and gravel. However, a survey prior to these actions should retrieve any archeological or historical information likely to be disturbed.

Socioeconomics The impacts of this alternative are essentially a combination of the impacts of continued hunting, trapping, and mineral material sales, plus the value of fuel wood gathering. The Army normally issues twenty to twenty-five permits to gather firewood each year. Assuming that each permittee removes an average of seven cords of wood a year and that the Delta Junction price for a cord of firewood is \$55 delivered and stacked, the total value of Fort Greely's firewood harvest is less than \$10,000 a year.

Military Current management places some restrictions on military activities. Protection of the caribou herd during calving season over the past few years has required that the military

cease training involving at least part of the impact areas for two or three days each year. Minimizing training operations during September places some modest constraints on military actions. These constraints may become more critical when the 6th Infantry Division (Light) is fully deployed. The Modified fire management classification for the area between the Richardson Highway and the Delta River could permit fires which would obscure the vision and prevent training and testing on the various firing ranges in this area.

**Compliance
with Section
810 (a) of
ANILCA**

Uses and Needs

Alternative A would leave Fort Greely substantially open for any ongoing subsistence use, which, at present, is low to nil. Such usage is not likely to increase, since subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake.

Section 810 (a) Finding for the Present Management
Alternative

Alternative A would not cause a significant restriction to the subsistence use of Fort Greely, since little or no such activity now occurs and the fort would remain open for such usage, subject to military requirements to close portions of the withdrawn lands for training and safety reasons.

Environmental and Military Consequences of Alternative B

**Air, Soil, Water,
and Vegetation** Due to the restrictions in access and activities in the withdrawal, there would be minimal impacts to these resources.

Harvesting three hundred acres of timber over the life of the plan in conjunction with clearing necessary for the military's mission would have little impact on the air, soil, water, and vegetation resources.

Because of its more aggressive fire suppression plan, this alternative may decrease the number of acres which would receive impacts from fire and the amount of smoke which would enter the air.

**Fish and
Wildlife**

The exclusion of hunters and trappers from the withdrawn lands would cause a temporary increase in game and furbearing species not at their carrying capacity. However, once a species has exceeded its carrying capacity, natural forces would eliminate the excess. Ultimately, the populations of the Fort Greely wildlife would reach an equilibrium, possibly much like that which exists in parts of Denali National Park, where hunting is also forbidden.

Visual Resources

Although this alternative prescribes Visual Resource Management 4 for the withdrawn lands, the minimal nonmilitary activity permitted in the plan would largely limit impacts to those created by the Army and Air Force in fulfilling their training and testing missions. The one exception would be the effects on visual resources resulting from the extraction of mineral materials for road work from two anticipated sites. Sand and gravel sites would most likely be near the road network between the Richardson Highway and the Delta River. However, this impact can be limited if operators properly rehabilitate the sites as indicated on page 89.

**Cultural
Resources**

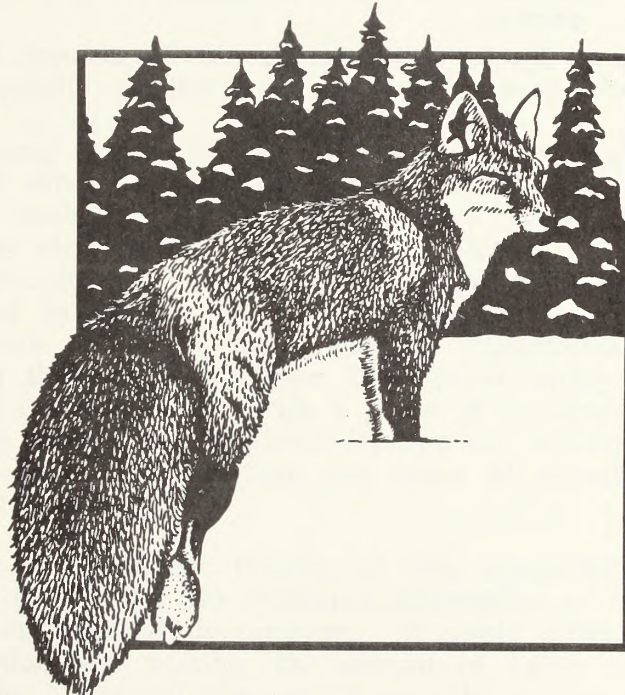
Under this alternative the effects on cultural resources would be limited to those related to the removal of sand and gravel for road work and to military use. A cultural survey prior to extraction of mineral materials or undertaking any military-related ground-disturbing action should retrieve any archeological or historical information likely to be disturbed by these operations. The thorough inventory, evaluation, and appropriate mitigation of cultural sites provided for in this alternative would maximize retrieval of the information value of cultural resources on the fort.

Socioeconomics

This alternative would have a negative impact on the Delta Junction area. Closing the fort to virtually all nonmilitary use would have its most obvious effect on the large number of hunters who commonly visit the fort. Besides forbidding a popular form of recreation, such a step would impact the local

economy. Currently hunting and, to a lesser extent, fishing and trapping on the withdrawn lands help generate about \$1 million for the economies of Delta Junction and the Fairbanks area. Denying use of the fort would not eliminate all of this economic stimulus. A minority of the individuals may forego or curtail these activities, but the great majority would simply shift their hunting, fishing, and trapping to other areas. The most likely users to stop their activities would be those who might have gone out for an hour or two before or after work to shoot or fish. These recreationists generate fewer inputs for the economy than those who travel longer distances, pay for lodging, and hire a guide, outfitter, or air charter service. Sportsmen and trappers would probably be able to find suitable substitute locations within the Tanana Valley. However, less of their activities would take place in the immediate Delta Junction area. Thus, while the economy of the valley may not be noticeably impacted, that of Delta Junction could be.

This alternative would also make for more expensive extraction of sand and gravel for private development in the area. TAGS, the most likely of the private developments, could get mineral materials from adjacent state lands, but transporting large quantities of sand and gravel to the portion of the gas line passing through the post would add considerably to the cost of the project.



Military

Prevention of virtually all nonmilitary access would greatly lessen the possibility of civilians restricting military training and testing. However, although placing locked gates at all road entrances to the withdrawal may help restrict unauthorized use and protect unwary civilians, it also would be a significant inconvenience for troops which need to have ready access to the training areas. Inventorying, evaluating, and, where necessary, mitigating cultural resources in advance of any immediately anticipated development would be more advantageous to the military than any of the other alternatives because it would lead to a shorter time lag between the time the military makes a decision to develop a project and the completion of the project.

**Compliance
with Section
810 (a) of
ANILCA**Uses and Needs

Alternative B would close Fort Greely to any ongoing subsistence activity. However, at present there is little or no such use on the withdrawn lands. Moreover, it is unlikely that there would be any increased demand for subsistence use of the withdrawal, since subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake.

Section 810 (a) Finding for the Present Management
Alternative

Alternative B would not cause a significant restriction to the subsistence use of Fort Greely, since little or no usage occurs.

Environmental and Military Consequences of Alternative C

Air, Soil, Water, and Vegetation Through protection and management of wildlife habitat this alternative provides the most protection for soil, water, and vegetation. Development and recreation would be restricted in many of the habitat areas, thus reducing their impacts to soil, water, and vegetation. The moose, bison, and sharptail grouse habitat would be enhanced through prescribed burns and other clearing methods. This action suppresses the natural vegetation succession in favor of herbaceous and shrub type vegetation, enhancing habitat for the above species. No significant adverse impacts to vegetation are expected, provided proper clearing techniques are applied.

Impacts to air, soil, water, and vegetation due to ORV use, forestry activities, mining activities, and fire are the same as described for the Preferred Alternative.

Fish and Wildlife The effects of this alternative on fish and wildlife are very similar to those of the Preferred Alternative. Nearly all the actions adopted in this alternative specifically to protect wildlife and habitat are also part of the Preferred Alternative. One exception is Alternative C's restriction of ORV use in grizzly bear habitat. However, the current level of ORV use is not enough to impact the animals or their habitat and no significant increase in these vehicles' use in the remote southwestern part of the withdrawal is anticipated. (Reynolds, 1988)

Visual Resources The impacts of this alternative on visual resources would be essentially the same as for the Preferred Alternative.

Cultural Resources Impacts to cultural resources would be sporadic and unique to each development undertaken. Small timber harvests and mining could disrupt cultural materials. However, a survey prior to clear cutting or mineral extraction should retrieve any archeological or historical information likely to be disturbed by loggers or miners. Some steps--the direction to discourage permanent roads and the requirement for those entering the area west of the Delta River during big game hunting season to enter with a guide or outfitter who would have to bear some responsibility for the recreationists' actions--would tend to limit the threat of unauthorized removal of artifacts.

Socioeconomics The socioeconomic benefits of this alternative would be similar to that for the Preferred Alternative in regard to timber and mineral development. It would differ in its distribution and possibly the amount of value derived through recreation. Recreationists would be able to access the withdrawn lands, but during the big game season they could only reach the popular hunting area west of the Delta River

by hiring a guide or outfitter. Under current management nearly all hunters fly into the area. Under this alternative, some of those who presently hunt the area without a guide or outfitter may choose to avoid the expense by hunting elsewhere. Others would hire a guide or outfitter, thus directing some impetus to that sector of the local economy. However, all of their contribution would not be a new infusion to the economy. Rather, hunters with their own planes would in essence be spending money for plane maintenance and repairs for the guide or outfitter's plane instead of their own.

Military

The impacts of some of the elements of this proposal, specifically those protecting caribou, sheep, and sharptail habitat are outlined in the environmental consequences of the Preferred Alternative. Alternative C Action 7 protecting grizzlies by restricting overland motorized travel in their habitat would have little adverse impact on training because little or no motorized training has occurred in this very remote area which is only accessible by motor vehicles in the winter. Minimizing training operations during September places some modest constraints on military actions. Because the amount of acreage which might be affected by this alternative by timber harvests is similar to that for the Preferred Alternative and because both recognize the primacy of the military's mission in determining a Forest Management Plan, the timber plan adopted under this alternative would have little impact on Army or Air Force activity.

Opening the withdrawal to mining west of the Delta River would affect training to the extent that mines are developed. Under this alternative some small acreages, possibly near Ptarmigan Creek, may be mined and the land on which the mining takes place and areas immediately adjacent to it largely lost to military training.

Compliance with Section 810 (a) of ANILCA

Uses and Needs

Alternative C would leave Fort Greely substantially open for any ongoing subsistence use, which, at present, is low to nil. Such usage is not likely to increase, since subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake.

Section 810 (a) Finding for the Present Management Alternative

Alternative C would not cause a significant restriction to the subsistence use of Fort Greely, since little or no such activity now occurs and the fort would remain open for such usage, subject to military requirements to close portions of the withdrawn lands for training and safety reasons.

Environmental and Military Consequences of Alternative D

Air, Soil, Water and Vegetation

The development of some recreational facilities to be contemplated in a RAMP would require clearing of the vegetation. Exposing mineral soils on sloped sites would create a potential for erosion and sedimentation. Confining development to well drained sites and on gentle slopes would reduce the adverse impacts. Impacts due to traffic dust is similar to that described in the Preferred Alternative. However, with an increase of 5,000 visitor days expected under Alternative D, these impacts would be greater than for the Preferred Alternative.

Impacts to air, soil, water, and vegetation due to ORV use are similar to that described for the Preferred Alternative. ORV use is expected to increase along with the general increase in recreational opportunities. With more ORVs in use, there would be more potential for vegetation damage, erosion, and sedimentation. However, it is not known whether the overall impacts would be adverse with increased use, or if the restrictions would adequately protect the resources.

Impacts to air, soil, water, and vegetation due to forestry activities, mining activities, and fire are the same as described for the Preferred Alternative.

Fish and Wildlife

The management actions prescribed by this alternative would tend to increase the pressure on the wildlife on Fort Greely. Since many of the improvements likely to be developed as part of the Recreation Activity Management Plan probably would focus on the area between the Delta River and the Richardson Highway, fish and wildlife would be most effected there. Fewer fish in the lakes stocked by ADF&G would grow to full size. Many terrestrial species would avoid areas such as campgrounds, which large numbers of humans may frequent.

While some actions would guarantee that the military would not close important game areas of the withdrawn lands during the primary hunting season, hunters already enjoy largely unfettered access. Consequently, the primary increase in pressure on game under this alternative would be a result of workers at any mine which may develop engaging in hunting off the job. Habitat improvement measures may



promote the growth of certain game populations, but hunters would almost certainly be attracted by any noticeable increase and prevent valued game species from sustained large increases. Moose between the Delta River and Jarvis Creek would probably prove an exception to this. Management actions to attract bison and other species to facilitate public viewing would tend to increase moose numbers. Hunters could not act to hold this population down so long as the area remains closed to moose hunting.

Visual Resources The impacts of this alternative on visual resources would be essentially the same as for the Preferred Alternative.

Cultural Resources Impacts to cultural resources would be sporadic and unique to each development undertaken. Small timber harvests and mining could disrupt cultural materials. However, a survey prior to clear cutting or mineral extraction should retrieve any archeological or historical information likely to be disturbed by loggers or miners. An increase in recreationists would expose more cultural artifacts to unintentional and intentional disturbance. Some cultural resources would inevitably be lost, but management actions to inventory, evaluate, and mitigate cultural resources in areas likely to receive large increases in visitors would minimize this loss.

Socioeconomics The socioeconomic impacts of this alternative would be similar to that for the Preferred Alternative. The primary difference would be the increased public enjoyment of the recreational opportunities of the fort and the monetary rewards local businesses could derive from supplying the needs of recreationists. The improvements which a Recreation Activity Management Plan might design would most likely promote nonconsumptive uses east of the Delta River. Consequently, most of the economic benefits would flow to those who service this sector of current or potential recreational users of Fort Greely.

Military By allowing the public access to the withdrawal without the Army's approval, this alternative would create a significant safety problem. Civilians, many of them armed hunters, would have less opportunity to learn where troops are training and soldiers would have great difficulty in knowing whether civilians will be in an area in which they wish to train.

Ceasing Army and Air Force training during moose hunting season would significantly impact the military's mission. Although the Army minimizes its training under present management, some training does occur. Over the life of the withdrawal some training would inevitably have to be conducted in conditions which are coincident with the hunting season. Also, as the 6th Infantry Division (Light) becomes fully deployed, the demand on Fort Greely's training areas would increase. The Air Force currently ceases firing

onto Fort Greely during the moose hunting season. However, the Air Force's use of the withdrawal's impact areas nearly two of every three days over the course of the year indicates the intense demand it has for the withdrawal and the difficulty prolonged denial of the area can have on its training.

Other actions could impede training. Placing road signs and mileage markers on roads and trails in the withdrawal would undermine instruction for troops in orienting themselves in unfamiliar terrain. Similarly, erection of interpretive and informational signs would detract from such training activities. Opening the withdrawal to mining west of the Delta River would affect training to the extent that mines are developed. Under this alternative some small acreages, possibly near Ptarmigan Creek, may be mined and the land on which the mining takes place and areas immediately adjacent to it largely lost to military training. The Modified fire management classification for the area between the Richardson Highway and the Delta River could permit fires which would obscure the vision and prevent training and testing utilizing the various firing ranges in this area.

**Compliance
with Section
810 (a) of
ANILCA**

Uses and Needs

Alternative D would leave Fort Greely substantially open for any ongoing subsistence use, which, at present, is low to nil. Such usage is not likely to increase, since subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake.

**Section 810 (a) Finding for the Present Management
Alternative**

Alternative D would not cause a significant restriction to the subsistence use of Fort Greely, since little or no such activity now occurs and the fort would remain open for such usage, subject to military requirements to close portions of the withdrawn lands for training and safety reasons.

Environmental and Military Consequences of Alternative E

Air, Soil, Water, and Vegetation With increased development in this alternative, air, soil, water, and vegetation would be impacted when more area is cleared for development-related facilities and associated roads. Permanent roads are encouraged and use of these roads by developers and other activities would increase traffic dust and its impacts as described in the Environmental Consequences Common to All Alternatives. Moreover, these roads may open areas previously inaccessible to ORVs, thus subjecting more area to ORV use and possible damage to vegetation. Impacts to air, soil, water, and vegetation due to ORVs, mining activities, forestry activities, and fires are the same as described for the Preferred Alternative.

Fish and Wildlife The impacts of timber and mineral developments on wildlife would be similar to those described for the Preferred Alternative. However, the emphasis on commercial timber harvests may encourage greater clear cutting, and consequently may slightly increase the habitat for browsers, grazers, and other species which favor open areas, while decreasing habitat for woodland species. And without the safeguards for wildlife habitat prescribed in the Preferred Alternative and Alternative C, the small mineral development postulated in the scenario might have a very minor impact on habitat in the southwestern part of the fort.

Visual Resources The impacts of this alternative on visual resources would be essentially the same as for the Preferred Alternative.

Cultural Resources Impacts to cultural resources would be sporadic and unique to each development undertaken. Small timber harvests and mining could disrupt cultural materials. However, a survey prior to clear cutting or mineral extraction should retrieve any archeological or historical information likely to be disturbed by loggers or miners. Alternative E's encouragement of road building in the withdrawn lands could increase access and, thereby, disturbance of cultural artifacts.

Socioeconomics Because of the restricted market for timber in Delta Junction and the Tanana Valley there is little reason to believe that there would be greater economic benefits from timber harvests under this alternative than under the Preferred Alternative or Alternative C. The economic impacts of this alternative would also be the same as those for Alternative C concerning mineral extraction and servicing recreationists.

Military Excluding military activities from economic control facilities would significantly restrict training if more than a handful of such facilities are established in an area.

Although the military can train around a site, a proliferation of sites which must be avoided can complicate training. Facilities located east of the Delta River would pose the greatest problem because the vast majority of training takes place in that area.

Opening the withdrawal to mining would affect training to the extent that mines are developed. Under this alternative some small acreages, probably near Ptarmigan Creek, may be mined and the land on which the mining takes place and areas immediately adjacent to it largely lost to military training. This alternative is potentially more restrictive of military activities than the others described in this document because it opens the lands east of the Delta River to mining. Should such mining develop, it would restrict the military more than mining on the west side of the river because the great majority of military training takes place east of the river.

The Modified fire management classification for the area between the Richardson Highway and the Delta River could permit fires which would obscure the vision and prevent training and testing utilizing the various firing ranges in this area.

**Compliance
with Section
810 (a) of
ANILCA**

Uses and Needs

Alternative E would leave Fort Greely substantially open for any ongoing subsistence use, which, at present, is low to nil. Such usage is not likely to increase, since subsistence users are at some distance from the withdrawn lands and have easier access to a plentiful supply of a variety of species closer to rural villages, such as Dot Lake.

Section 810 (a) Finding for the Present Management
Alternative

Alternative E would not cause a significant restriction to the subsistence use of Fort Greely, since little or no such activity now occurs and the fort would remain open for such usage, subject to military requirements to close portions of the withdrawn lands for training and safety reasons.

Summary of Section 810(a) ANILCA Findings for All Alternatives

The Preferred Alternative and the other alternatives have been evaluated in this chapter for their effect on subsistence uses and needs. None was found to have the potential to cause a significant restriction to subsistence uses. This is because the level of ongoing subsistence usage of Fort Greely is low to nil, as described in Chapter 2. Thus, to even cut it off entirely, as would happen under the most access restrictive alternative (Alternative B) would only mean that potential subsistence users would use other lands closer to their residences, just as they do now.

Unavoidable Adverse Impacts

Besides the effects of the military activities for which the land has been withdrawn which are beyond the scope of this plan, there are unavoidable adverse impacts of each alternative.

ORV use would crush some vegetation, primarily near the road network. In particularly high use areas, ORVs would also disturb soils.

Surface mining, whether for sand and gravel or for locatable minerals, would strip soil and vegetation and reduce wildlife habitat in the immediate vicinity of the operation. Some soil would erode and sediment would be transported into streams and lakes. Vegetative resources in many cases could require decades to fully recover.

Surface disturbing activities such as timber harvesting, construction of roads and recreation facilities, and mining would destroy or alter visual and cultural resources. These resources also would suffer from actions not within the government's discretion, such as vandalism, illegal collecting, natural erosion, and minimal wildfire suppression.

Short-term Uses versus Long-term Productivity

Harvesting a commercial timber stand under this plan would mean that that resource would be unavailable for some decades to come. Once sawtimber or house logs have been cut, it takes at least seventy years for the forest to mature again to produce these products. Deciduous fuel wood stands will become reestablished in twenty-five to thirty years. However, the practice of harvesting the withdrawal's timber on a sustained yield basis as proposed in several of the alternatives in this document would result in greater long-term productivity than the current practice of no commercial harvests.

Mining, by stripping surface vegetation and soils, can destroy commercial stands of timber. If the area is not logged

before mining commences, the current timber would be lost, and another such stand would not likely reestablish itself for periods indicated in the above paragraph.

Alternative A, which allows use of ORVs on unstable soils, could have adverse long-term impacts on soils and vegetation. Regular use of ORVs in such areas can cause gullying and the loss of soil. The sliding of soil down hills can undermine current vegetation and greatly retard or completely prevent their reestablishment.

The above surface-disturbing actions could also have long-term impacts on wildlife by removing habitat. However, it is unlikely that the amount of habitat destroyed would be large enough to have a significant impact on animal populations.

Irreversible and Irretrievable Commitments of Resources

Few actions prescribed in any of the alternatives would irreversibly or irretrievably commit the resources of the withdrawn lands. This is particularly true if wildlife habitat is protected through proper mitigative actions. The removal of a mineral resource is an irreversible and irretrievable commitment of that specific resource.



CHAPTER 4

PUBLIC PARTICIPATION AND GOVERNMENT CONSULTATION

Chapter 4

Public Participation and Government Consultation

Public Participation

The planning team initiated its public participation period in mid-July 1987. On July 21 the *Federal Register* published a Notice of Intent which announced the beginning of the planning process and listed the preliminary issues and criteria. The team mailed 194 brochures describing the planning process and purpose and outlining preliminary issues and criteria to a wide variety of agencies, organizations, interest groups, and individuals on July 15, 1987. In the same week a news release sent to nearly sixty newspapers, radio stations, and television stations in Alaska began to generate calls to BLM requesting copies of the pamphlet. Subsequent contacts with the public led to the distribution of additional copies of the brochure. In addition to the initial mailing, approximately one hundred pamphlets were distributed to interested members of the public through the Steese/White District Office, the BLM's Public Affairs office in Fairbanks, and public meetings held in August 1987 in Delta Junction and Fairbanks. The mailing list for the scoping brochure is on file at the BLM Alaska State Office in Anchorage and at the Steese/White Mountains District in Fairbanks. Those receiving the brochure included:

Federal Elected Officials

Senator Ted Stevens
Senator Frank Murkowski
Representative Don Young

Federal Agencies

Air Force, Eielson AFB
Alaska Land Use Council, BLM Representative
Alaska Land Use Council, Federal Co-Chairman
Alaska Public Lands Information Center (Fairbanks and Tok offices)
Bureau of Indian Affairs
Bureau of Mines
Coast Guard
Department of Energy
Department of the Interior, Office of Regional Solicitor, Anchorage
Environmental Protection Agency

Federal Aviation Administration
 Federal Highways Administration
 Fish and Wildlife Service
 Forest Service
 Geological Survey
 Government Printing Office
 Institute of Northern Forestry
 National Oceanic and Atmospheric Administration
 National Park Service
 Soil Conservation Service

State and Local Elected Officials

Governor Steve Cowper

Senators

Don Bennett
 John B. Coghill
 Bettye Fahrenkamp

Representatives

Mike Davis
 Steve Frank
 Niilo Koponen
 Mike W. Miller
 Richard Schultz

Mayors of Delta Junction, Fairbanks, Fairbanks North Star Borough, and North Pole

State Agencies and Organizations

Alaska Division of Governmental Coordination
 Alaska Governor's Office, Washington, D.C.
 Alaska Land Use Council, State Co-Chairman
 Citizens' Advisory Commission on Federal Areas
 Delta Advisory Committee
 Fairbanks Advisory Committee
 State Historic Preservation Office
 University of Alaska
 Agricultural and Forestry Experimental Station
 Cooperative Wildlife Research Unit
 Elmer E. Rasmuson Library
 Institute of Arctic Biology
 Land Management Office
 Mineral Industry Research Laboratory
 Museum
 Departments of Anthropology, Biology, and Research and
 Advanced Study

Others

9 members of the Fairbanks Advisory Council
 15 environmental and outdoor organizations
 31 business and resource development organizations
 14 Native organizations
 33 newspapers, journals, and radio and TV stations

This scoping pamphlet included a form with a prepaid return mailer, asking for public comments. Nine individuals and organizations responded in writing to the questions posed by the brochure.

The planning team held meetings to gather public comment on the preliminary issues and criteria on August 18 and 19, 1987 in Delta Junction and Fairbanks, respectively. Approximately twenty people attended these meetings. Some of those attending shared their concerns and on-the-ground expertise, particularly on trapping and hunting on the withdrawn lands. They conveyed their knowledge and interests through extensive discussions with team members, written responses on forms provided to address each issue, and by recording resource and use information on maps supplied for that purpose. In addition, the Steese/White Mountains District Manager and a District planning team member spoke about the plan to, and encouraged comments from, the Fairbanks Chamber of Commerce and Fairbanks affiliates of the Alaska Miners Association, the International Right-of-Way Association, and the Lions Club.

Consultation, Coordination, and Consistency

The Bureau of Land Management, which has primary responsibility for planning the nonmilitary use of the Fort Greely withdrawal, and the 6th Infantry Division (Light), which has carried on the day-to-day management of the land since creation of the withdrawal in 1961, jointly prepared this document. This joint effort was designed to pool the expertise of the two agencies, as well as to ensure the maximum coordination of military and nonmilitary planning for the withdrawal.

The planning team has consulted with federal, state, and local agencies to ensure consistency between the alternatives outlined in this draft report and the management of adjacent land. Those parties receiving earlier drafts of the alternatives included the Air Force, Alaska's Division of Government Coordination, and the city of Delta Junction.



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Appendix A

List of Preparers

The following individuals served as planning team members for this Draft RMP/Draft EIS.

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M.S. Wildlife Management, Virginia Polytechnic Institute and State University

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Carol Belenski
Project Cartographer and Publishing Coordinator

Sue Steinacher and Kim Pierce
Illustrators

Appendix B

Calculations of Economic Value of Recreation on Fort Greely

Resource specialists on the joint Army-BLM planning team used two methods which estimate the value of recreational use of the withdrawal. One method estimated visitor days, the type of use which took place on these days, and assigned a dollar value to the various visitor days. The other method focused on hunting, calculating the value of the species taken and the cost to those harvesting Fort Greely's wildlife. Each specialist strove to derive estimates of expenditures. Both methods are very hypothetical. That both arrived at a figure of about \$1 million is in part attributable to hunting being the major recreational activity on the withdrawal.

Visitor Day Method

There are no studies of expenditures by recreationists which are directly applicable to Fort Greely. However, there has been research of somewhat analogous use. Hunting on the withdrawn land can be divided into two types--the more expensive trip which generally entails flying into the area west of the Delta River and the trip in which hunters gain access via the road network east of the river. There are no appropriate estimates of the average daily expenditure for fly-in hunting. Studies of deer, moose, and goat hunting in Southeast Alaska in 1986 determined average expenditures to be \$120, \$196, and \$355, respectively. (ADF&G, 1986a; ADF&G, 1986b; ADF&G, 1986c) A 1983 statewide sheep hunt study indicated that average daily expenses were \$275. (Watson, in progress) These figures are suggestive of expenditures; based upon them the recreation specialist assigned the average hunting day west of the Delta River a value of \$250.

There is a more analogous study of hunting expenditures in a roaded area. In 1984 ADF&G conducted a survey of hunters along the Denali Highway and found that their average expenditure was \$94 per day. (ADF&G, 1984) Consequently, the recreation specialist estimated that hunting costs east of the Delta River would average about \$95 per day.

The expense involved with other recreation use, such as picnicking, sight-seeing, and camping, is not as well documented. Average daily expenditures by visitors to

Fairbanks in 1985 were \$45. (GMA Research Corporation) However, these probably reflect expenses such as hotel accommodations that few visitors to Fort Greely would entail. Consequently, the recreation specialist estimated that these other recreationists would contribute about \$25 a visitor day to the Alaskan economy.

Using these figures and estimates of current use derived from the Army's Provost Marshal's Office and ADF&G the recreation specialist made the following calculations:

hunting west of Delta River	$\$250 \times 3000$	$= \$750,000$
hunting east of Delta River	$\$95 \times 385$	$= \$36,575$
other recreation	$\$25 \times 4615$	$= \underline{\$115,375}$
		\$901,950

Wildlife Unit Value Method

The planning team also examined the value of hunting by estimating the average expenditure for each animal harvested on Fort Greely. The major species hunted are moose and caribou. Studies by the Fish and Wildlife Service in 1980 and Robert McLean for ADF&G in 1983 estimated the value of big game taken in the Tanana Valley. More recently McLean estimated that about 60 percent of that value is derived from moose and 15 percent from caribou. (McLean, 1988) Given the number of each species harvested in the valley, this would result in a figure of \$10,200 expended for each moose harvested and \$16,795 for each caribou. Hunters take an average of 53 moose and 42 caribou from Fort Greely each year. If they spend the average sums to get these animals, then hunters on the fort expended \$540,600 for moose and \$705,390 for caribou. Other species stimulated much lower expenditures. For example, bison hunters spent about \$18,000 in 1986-87 in the Delta Junction area. (Morgan, 1987) (They would have spent more reaching the vicinity from other areas of Alaska.) The vast majority of bison are taken from lands outside the withdrawal so less than a thousand dollars of these proceeds can be directly attributed to hunting on Fort Greely.

Appendix C

Bibliography

Management Situation Analysis Documents

Most of the resource and management information summarized in this report is addressed in greater detail in a series of reports, called Management Situation Analysis (MSA) documents, prepared by the planning team. The titles of the MSA reports differ. They are cited in the text by the author's name, MSA, and, if the author wrote such a report on more than one resource or use, by the name of the resource or use. These documents are listed below and are available in Anchorage at the BLM's Alaska State Office, Branch of Planning and in Fairbanks at the agency's Steese/White

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Douthit, Lee. Subsistence

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